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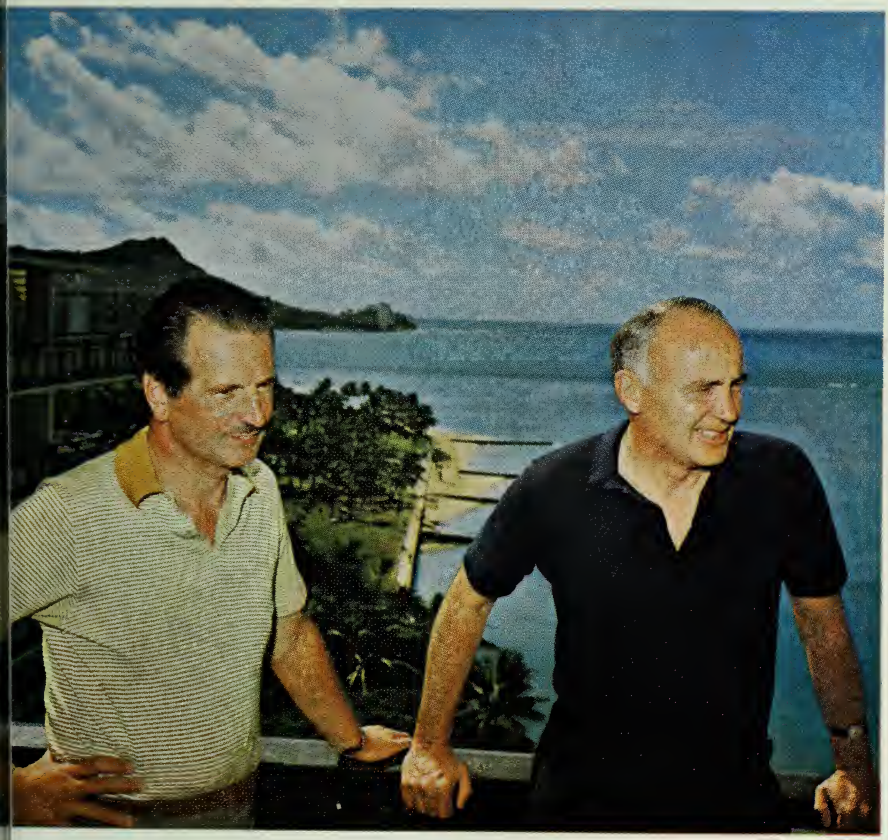

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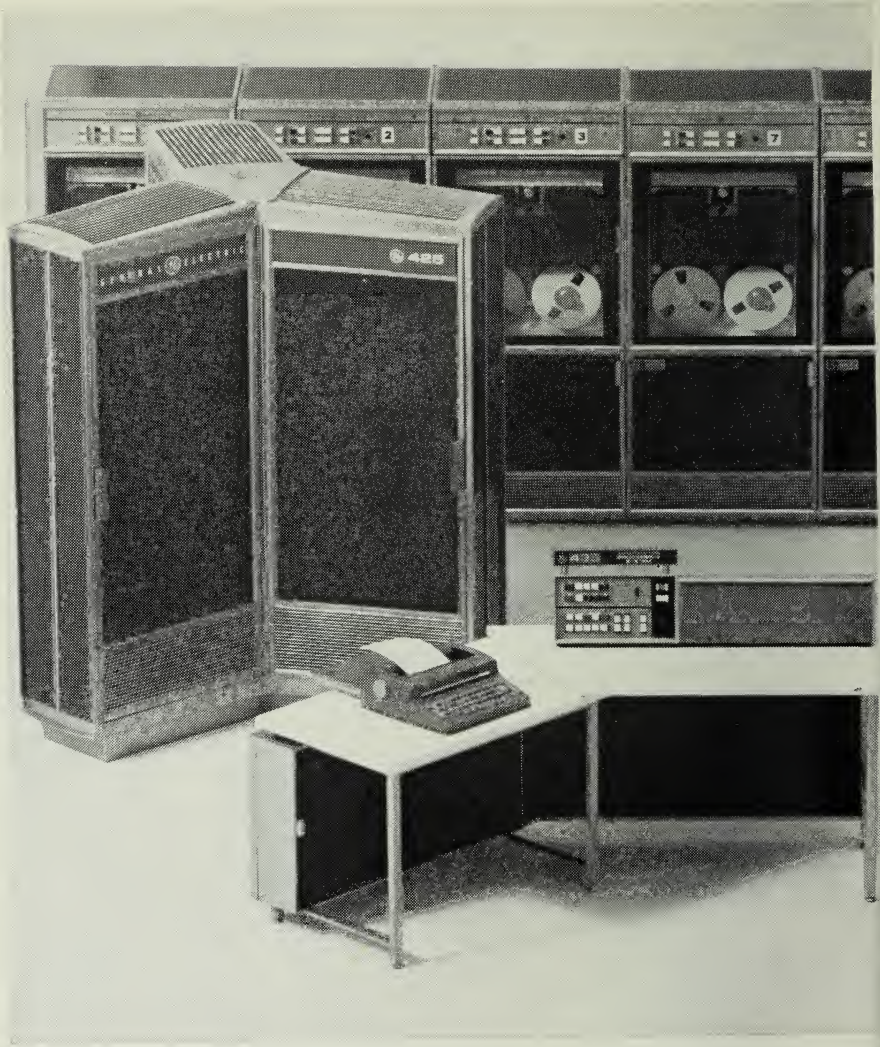
Waikiki was a stop-over point for Varsity's President, Dr. Claude Bissell and McGill's Principal, Dr. H. Rocke Robertson on flight to Tokyo for the International Association of Universities meeting in September.



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VARSITY
GRADUATE

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December 1965

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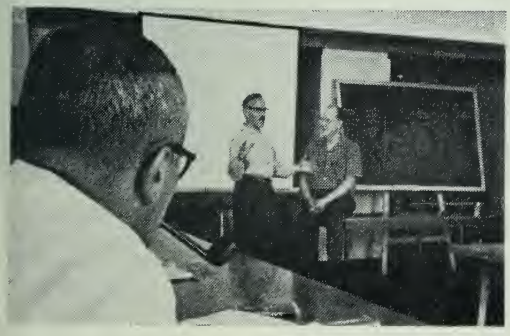
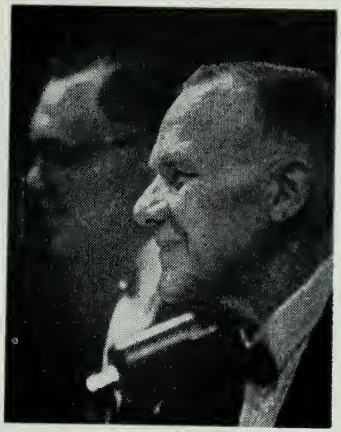


Businessmen at school *(see page 77)*



Large sections of the current issue are given over to the retirement of Dr. F. C. A. Jeanneret as the 22nd Chancellor of the University and the installation of Dr. Omond Solandt as his successor. The portrait above was made at a dinner in honour of the retiring Chancellor.

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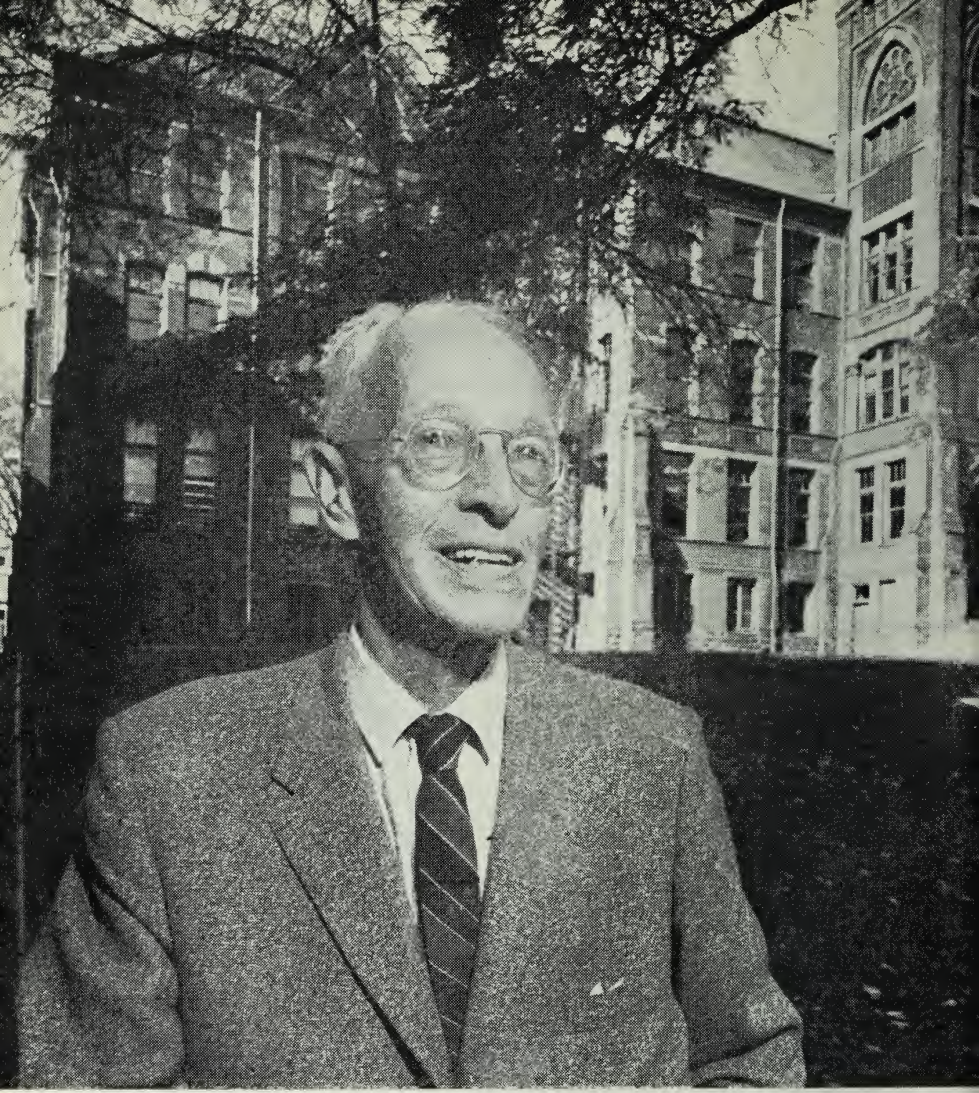

Walter N. Moorhouse spent the early years of the century in civil engineering at the School of Practical Science, predecessor of the Faculty of Applied Science and Engineering. In the article that begins on the facing page, Mr. Moorhouse recalls his S.P.S. days. From engineering he switched to architecture and worked on the plans for Hart House, Burwash Hall, and the Birge-Carnegie Library. He practised his profession in Toronto and became a Fellow of Royal Architectural Institute of Canada. Mr. Moorhouse is now retired and lives in Oakville.

Student Life — A Flashback

Golden Years At Old S.P.S.

WALTER N. MOORHOUSE

PROLOGUE

ONE CAN HARDLY believe such a change has taken place in construction since the beginning of the 20th century.

Excavation in those days was almost all by horses and hand or wheel scrapers and the rest back-breaking spade-work. There were no bulldozers or dip buckets and the steam shovel was an awkward monster for which a ramp was required to recover it from the hole. Foundation walls were mainly of flat stone hooked up from the lake bottom into sailing schooners.

Steel framing was beginning to replace cast iron, the design data being supplied to the architect by the fabricator. Scaffolding was of wood poles lashed together with rope by riggers (mostly sailors) who provided stiff-leg or guyed derricks of limited range. The slow crawl of the hod carrier up those long shaky ladders was a grim feature of most jobs, and hoists were primitive. Only a very important job called for a donkey engine. Our modern steel scaffolding and construction gantries were undreamed of for years.

All our technique for winter building was in the future. The bricklayer in summer was the plasterer in winter.

Materials had come down through the centuries with little change. Quick-lime had to be slaked for ordinary mortar and plaster base, in which cow-hair was still used and the old mortar bed was about the

first thing that appeared on a job. Lath was mostly of hemlock, but expanded metal was beginning to appear, while gypsum board had not yet come into use. Insulation of buildings was largely fortuitous and synthetic plastics were a laboratory experiment. Chemical detergents were a product of World War I.

Streets and buildings were dimly lighted by gas and the electric arc lights were just fizzling out.

Plumbing and heating were done mainly by plumbers and fitters without benefit of engineer. Boiler manufacturers generally furnished the architect with plans and specifications.

The Toronto Electric Light Co. supplied a certain amount of power and light, but it was several years before the Ontario Hydro materialized. Fluorescent lamps were just coming in with World War II.

The first reinforced concrete building in Toronto is dated 1900, and, strange to say, has not yet been demolished.

The stage was set for a vast transformation scene and architects and engineers were standing in the wings waiting for their cue.

Great social changes too were going on, foreshadowing the advent of the welfare state. Possibly the greatest social and moral changes were gradually being built up by the impact of evolutionary study which blew a lot of our sacred cows sky-high. Suddenly we were in an age of science and materialism, though we didn't know it at the time and couldn't have cared less. When we had leisure and could afford it we went to concerts, theatres, legit., vaudeville or burlesque, according to our tastes. (These were the palmy days of the Star Theatre.) Sex was as urgent to youth then as now, but was not so blatantly advertised. Moving pictures had only just got started.

Some tried to cultivate a taste for beer or skill at billiards at the "Caer Howell" but these recreations were taboo to a large proportion of our year who were "putting themselves through college". Few bursaries were available and government student loans for education unheard of. Today we have a politician advocating salaries for students attending universities.

FRESHMAN YEAR 1901

"The first year man when
he comes to the School
"Gazes with awe on a two-
foot rule."

The fall of 1901 must have been one of pleasant weather, as I well remember watching the inter-collegiate tennis finals in the middle of October on the grass courts south of the old Gym, where now the northern part of Hart House stands. Anyway, it was a lovely sunny day when I walked up to register.

After generally "casing" the Old Brick School and watching arrivals, I noticed most of them entered on the east side of the building south of the tower. I hesitatingly followed them and met a formidable looking old chap, evidently a janitor. I wish I

could remember his name—he gave me the impression of a savage watch-dog. I found out later that this was his manner towards the "frosh" and that he warmed up as the years passed until at graduation you felt you were parting from an old friend.

In passing, I must again mention that tower door which led to the coat and wash rooms in the basement. It closed itself by means of a clumsy weight, rope and pulley gadget, and the constant banging must remain as an echo in the mind of every old School man as it still does in mine. It was probably symbolic of what an ancient student once wrote: "But evermore came out by the same door wherein I went."

From the basement we climbed to the main floor where the Registrar's office and library flanked the stair hall. The Registrar, Professor A. T. Laing, was also Librarian, but his many duties forced him later to take on an assistant, F. A. Gaby, later of Hydro fame. I don't remember ever daring to enter any other rooms on the main or second floors until later years.

The third floor with its huge draughting room was the freshman's domain, and we were supplied with sufficient practice sheets and problems to keep us busy for the year. Now and then a disturbance would flare up—someone had offended the student body by non-conformity or some more specific cause. On at least one occasion, an unwashed individual, for what was later known as B.O., was seized and bound and his face daubed with colour. He was then lowered through one of the circular floor gratings down to the second year draughting room below, where the paint was thoroughly washed off under the tap.

On the main floor, we were lined up and filed slowly through the Registrar's office. I had no idea what course to take on, but found several congenial spirits and plumped with them for "Civil".

Our year was quite a mixed bag. There were a few sports and socialites who joined fraternities — Greek letter societies we called them — and walked by themselves. Then there was the athletic set, famous in Gym or field sports—"Casey" Baldwin, Harold Beattie, Pete Jermyn, Bill Worthington, still remembered. I never discovered how they found time to study and pass exams.

The main group, including the writer, were young, and came from private or high schools with little knowledge and less experience. The solid core was of those who had worked in mines, shops, on railroad and land surveys, men who could pack heavy loads over rough portages. Finally there was a small number of much older men who had saved up from their starvation salaries as country school teachers—three or four hundred a year. Theirs was a strong stabilizing influence and most of them became land surveyors and township engineers, some of them very well known later.

Civil engineering held the majority. Mechanical and Electrical and Mining were also well represented. There was

the odd candidate for Chemical Engineering, but not one solitary Architectural student. Our year included two South African War veterans, Ernest Pullen and Karl Allen, who wore the stamp of the army and to us an aura of romance.

Col. Lang, Professor of Chemistry, was training an engineering company, under the captaincy of the famed football star "Thrift" Burnside. As far as most of us were concerned, this was a lot of "swank". Little did we think that two World Wars would later discourage such fancies.

Our real heroes were the few post-grads whom we would watch crossing to a building south of the Old Brick School. You could see them through the big north windows in their blue denim overalls, oiling or making records on a large engine, like priests of some mysterious cult. Among these shadowy figures, George Bertram and Hal Acres appear, whose names are still associated with great engineering projects. The School song runs,

"The fourth year man comes
back to have his fling,
"He bums around the lab
and he doesn't do a
thing."

Though what they had to do was a year of research and then to write a thesis for their degree of B.A.Sc. The three year period provided only a diploma.

No one had ever told us how to take lecture notes, so we had to work it out for ourselves, using a scratch notebook in class and copying laboriously into a subject notebook later. This was a *bad thing* and cultivated a short photographic memory. Once, on entering an examination room, I noticed a usually untidy chap wearing starched cuffs, the underside of which were covered with formulae. This certainly was not "cricket", but later, while writing, I could see in my mind's eye not only the page in the notebook but the line that held the required answer, and thought I wouldn't start throwing any stones.

Being the youngest and most underweight of our year, I tried to avoid most of the rough stuff, but got caught up in a terrific struggle for a flagpole after a Med-SPS Mulock Cup match. The Meds had the better of us and we were dragged relentlessly down a passage north of the Biological building. I was squeezed between the pole and the rough stone wall and thought this was the end. However, someone appeared with a saw and shortly there were four poles and four fights.

At the turn of the year disaster overtook us as a wretched mumps-carrier appeared and infected our whole year. A few fortunate ones escaped but for most of us swollen glands and impending exams brought our normal high spirits down to zero. Then came a smallpox scare and all had to be vaccinated. We lined up in the draughting room and filed past the doctors to be scratched. One husky lad from the back-blocks was watching the operation intently awaiting his turn. Suddenly the blood-line on his forehead descended like a curtain, leaving his face ghastly grey,

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but he was caught as he fell and laid out on the floor. We all had very sore arms but shortly after this held the annual smoker where two husky welterweights ended a round tangled up in their arm bandages.

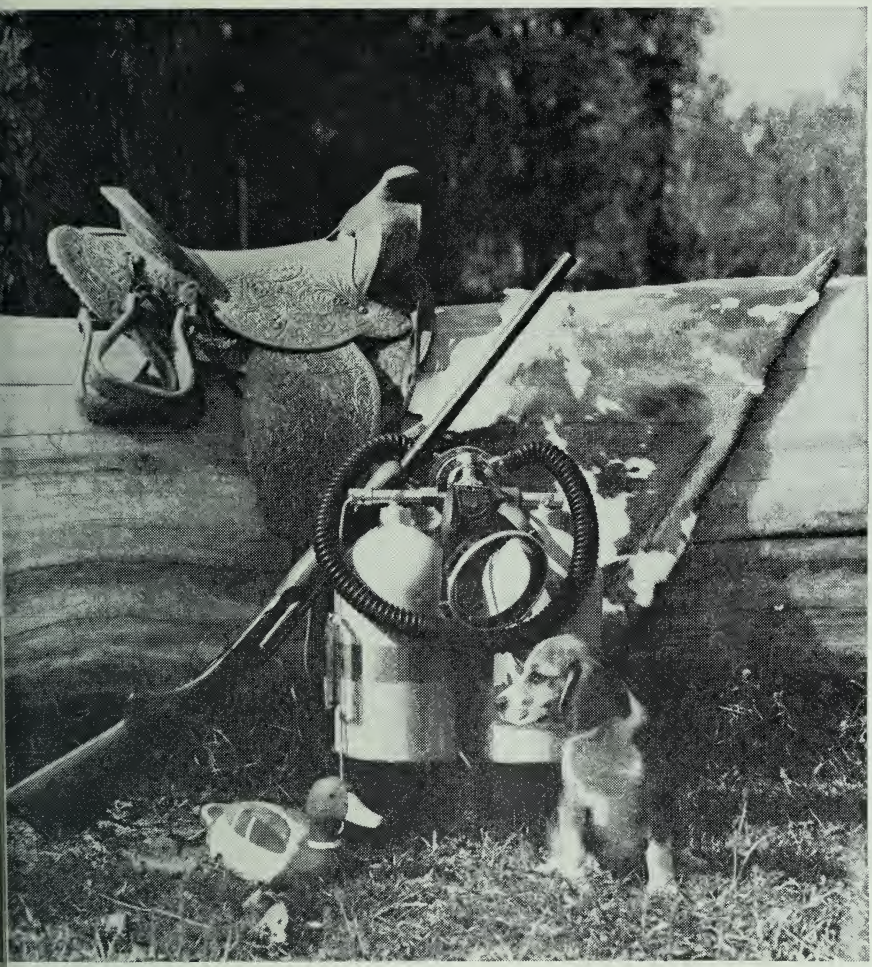
We were lucky in having a sound and popular teaching staff. The Principal, Professor Galbraith (Johnny to all) was not a fluent lecturer, but he ground away at fundamentals, so that what we learned stuck.

The Dean, Dr. W. H. Ellis, may not have been a brilliant lecturer but the truth was in him and we knew it. He had a donnish sense of humour which was sometimes too subtle for our untutored minds, in spite of which he was surely the most popular of the teaching staff. (There was a point about School men I couldn't understand at the time. They were a rough crowd from many backgrounds, but could recognize "the genuine article". Astonishingly, Professor Maurice Hutton was always a prime favourite with them, in spite of the fact that he was a gentleman and a scholar.)

Professor L. B. Stewart, known as Louie B., was always a mile ahead of the class. He covered the board from end to end with diagrams, and only the fleet could follow. Most students just didn't bother.

Professor C. H. C. Wright was probably more with the students than any of the staff. Like Johnny G., he pounded away at the fundamentals. He lectured also to Architectural students, if any. From the University professors we probably absorbed more

(*Continued on Page 110*)



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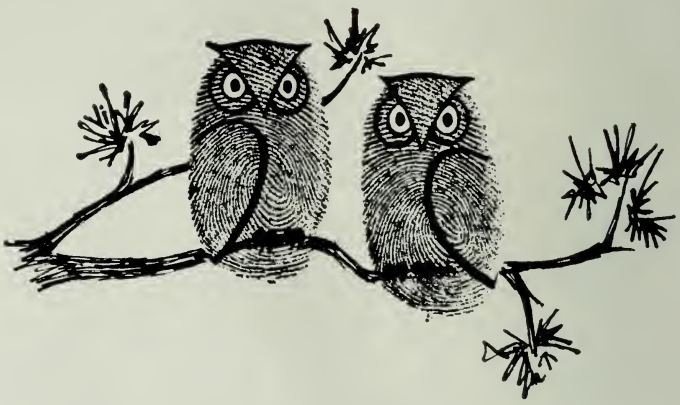

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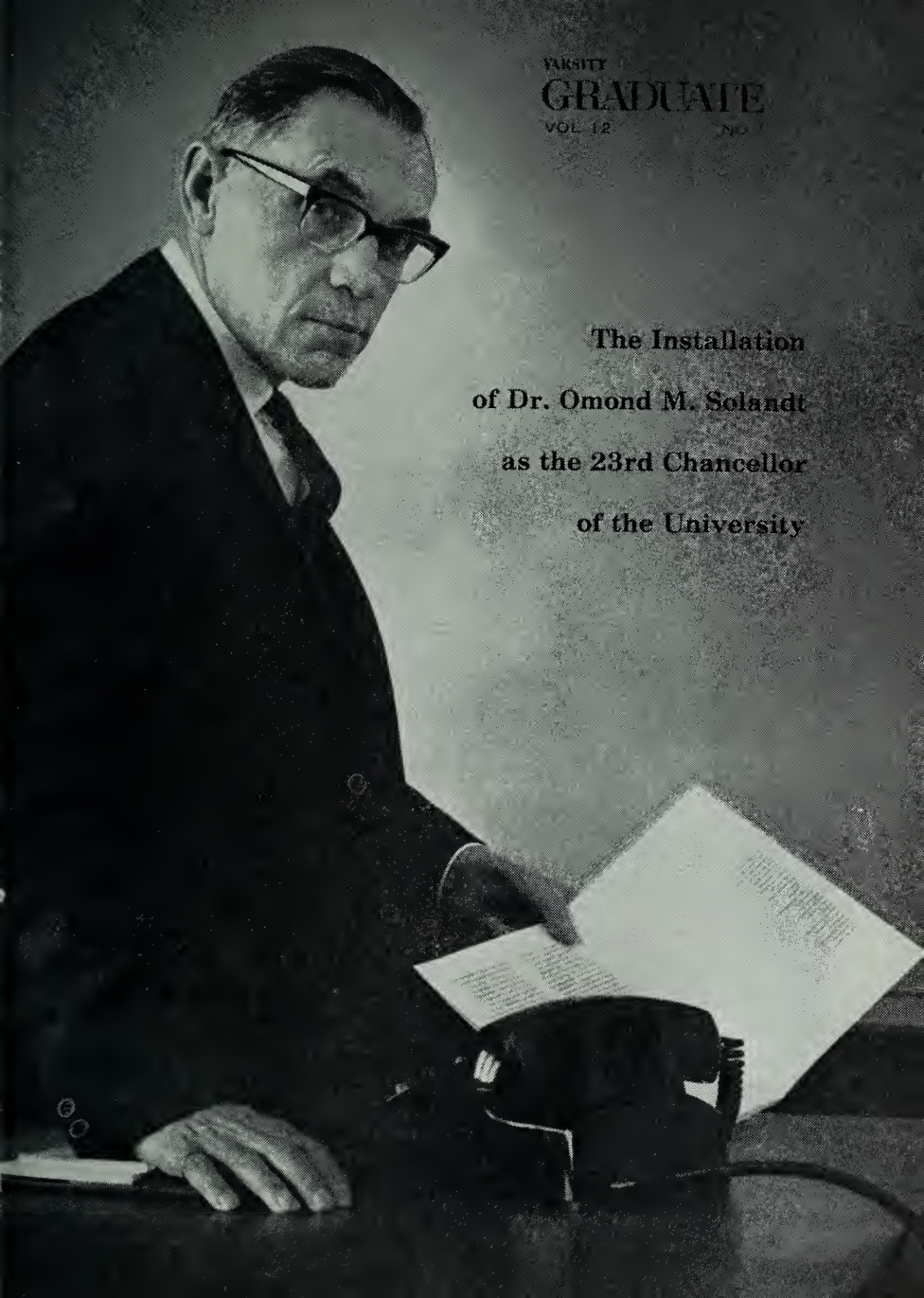
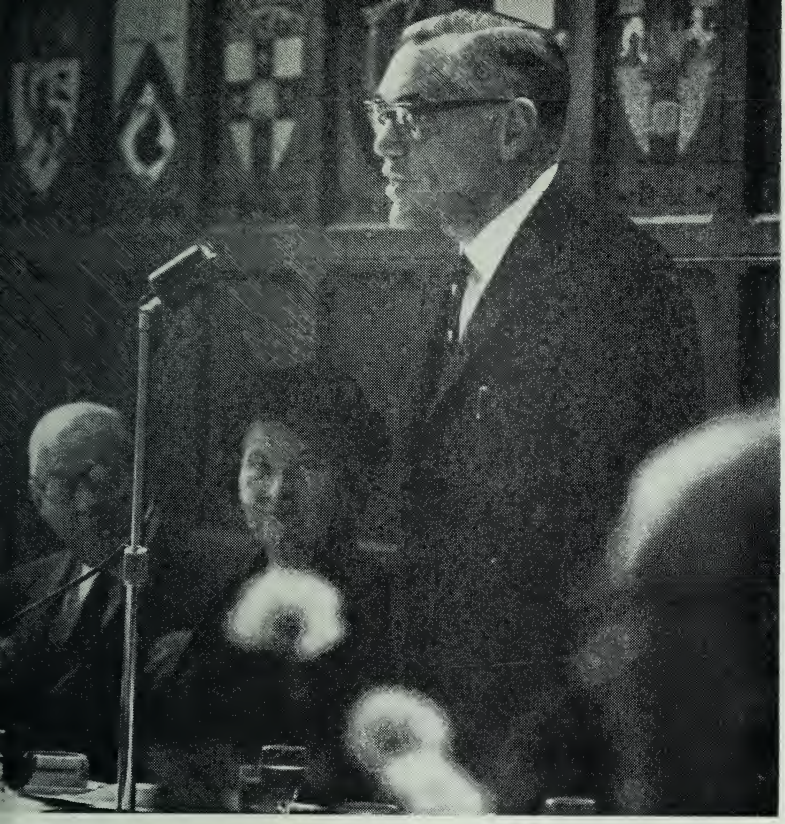


The Installation of Dr. Omond M. Solandt as the 23rd Chancellor of the University

Varsity Toasts the New Chancellor

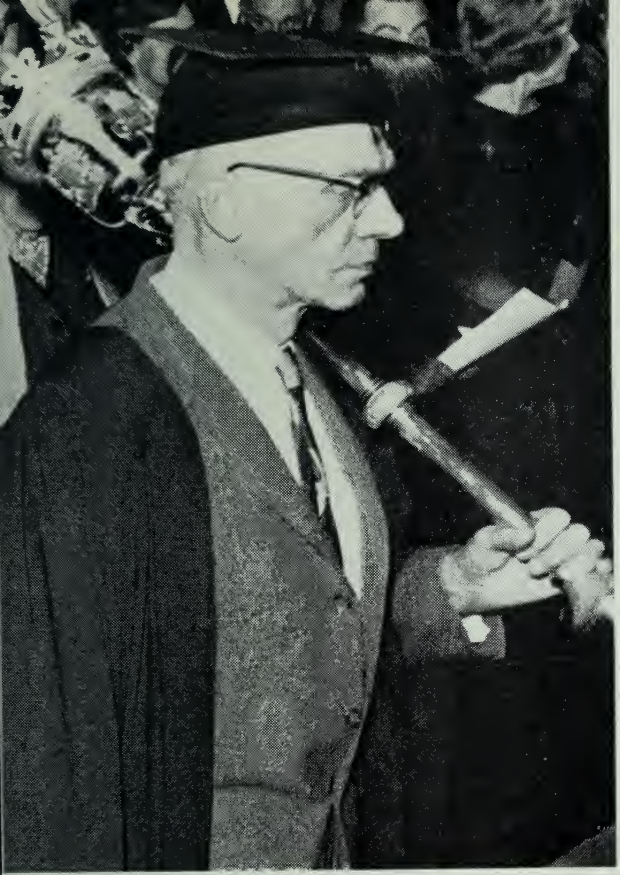
Omond McKillop Solandt, O.B.E., M.A., M.D., D.Sc., F.R.C.P., F.R.S.C., was honoured at a luncheon before his installation as Chancellor. Honoured with him were Robert Bryce, Louis-Paul Dugal, Marcel Faribault and R. S. McLaughlin, his first honorary graduands. President Bissell proposed the toast to Dr. Solandt (*above*). Others at the head table were Mrs. Solandt, Mr. and Mrs. Bryce, Dr. and Mrs. Dugal, Dr. and Mrs. Faribault, Col. McLaughlin and Miss Isobel McLaughlin, Hon. W. E. Davis, Minister of University Affairs; Mayor Philip Givens, Dr. and Mrs. Henry Borden, Mrs. Bissell, Dean Vincent Bladen, Dr. and Mrs. A. B. B. Moore.

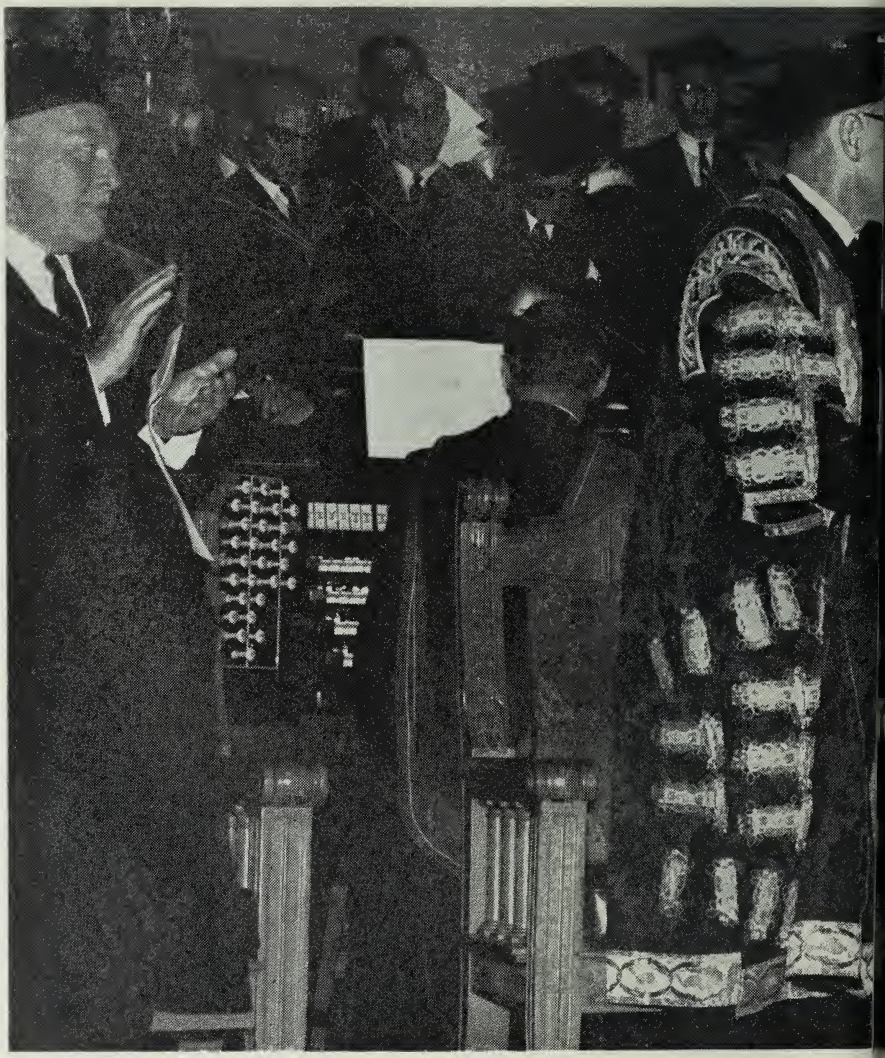
At the luncheon, facing page: (*Top, left to right*) Dr. Borden, Mrs. Bryce, and Dr. Solandt, replying to the toast. (*Bottom, left to right*) Mrs. Bryce, Mrs. Solandt, Mr. Bryce (in background), and Hon. M. W. McCutcheon.



The 23rd and the 22nd Chancellors

As the stately installation procession moved down the aisle of Convocation Hall, for a brief second the new and the retired Chancellors were side by side. Dr. F. C. A. Jeanneret was standing beside Mrs. Jeanneret with hundreds of others in the audience, in tribute to his successor. There passed the traditional procession: the Mace, borne by the University Bedel, the Esquires Bedel, the President, the President of the Alumni Association, the Principal of University College, the President of Victoria College, the Provost of the University of Trinity College, and the President of the University of St. Michael's College. The new Chancellor awaited investiture, his predecessor and Mrs. Jeanneret watched from their seats below.





Formally Installed, Then Applauded

After the formal installation, Dr. Solandt (*facing page, top*) raised his mortarboard in acknowledgment. As the President shook the Chancellor's hand, Dr. Borden (*below, left*) and Dr. Moore (*right*) led the applause.

Dr. Solandt (*above*) confers first degree on Robert Bryce, then (*below*) on Marcel Faribault. Seen between the Chancellor and Dr. Faribault is Dr. Louis-Paul Dugal, also an honorary LL.D.

The Chancellor's First Degrees

CONVOCATION was a dual ceremony: the ritual of installation of the Chancellor and the first conferring of degrees by Dr. Solandt.

Dr. A. B. B. Moore, President of Victoria University, gave the Invocation; Registrar Robin Ross read the Instrument of Appointment; William H. Palm, President of the Alumni Association, administered the Oath of Office, and President Claude Bissell formally invested Dr. Solandt.

After his address, the Chancellor conferred the degree of Doctor of Laws *honoris causa* on:

Robert Bryce, U of T alumnus, economist, Deputy Minister of Finance, Ottawa — "one of the great public servants of his generation", in the words of the President's citation.

Louis-Paul Dugal, physiologist, former University of Ottawa dean, member of the Bladen Commission on the financing of higher education, now Assistant Director, Privy Council Science Secretariat, Ottawa.

Marcel Faribault, business man, lawyer, political scientist, one-time University of Montreal administrator — "a Canadian who examines our weaknesses that we may better know our strength."

Robert Samuel McLaughlin, Chairman of the Board, General Motors of Canada.

Addressing Convocation, Dr. Faribault said English Canada could not be understood without understanding its English heritage. He recalled the promise of William the Conqueror "to prevent all changes, political as well as legal, otherwise than through addition or accommodation, so as to curtail nothing of the exuberance of life and of the conquests of customs."

Such a heritage, he said, "applied to Canada . . . could have but one meaning: the necessity to accept without reservation the laws and traditions of Quebec, which was fully entitled to exact the same assurance of non-modification otherwise than through her normal evolution by the assent of her own people according to their own conception and couched in their own formulas. . ."

". . . the one certain way not to solve Canada's problems", he said, "would be to think of laissez-faire as a cure-all, of central government as the dispenser of all bounty and benevolence, of unwritten laws and precedents as the only source of political evolution, of there being only one instead of two great Canadian traditions: that of France and French Canada . . . so deep as to have become ineradicable, and that of Great Britain and English-speaking Canada, itself divided into so many strains, on so many lands and over such a period of time. . ."

Finally, said Dr. Faribault, "to reconcile so many different tendencies and inner contradictions" required discussion, compromise, and, "of necessity, humour . . . the ever-wonderful reminder that man is a creature of laughter, always ready to start afresh after being startled back to his senses."

He 'Hitched His Carriage to the Stars'

"A powerful member of our army and thus . . . a colleague". In these words President Bissell welcomed to the University community Robert Samuel McLaughlin, "a man who in more sense than one has hitched his carriage to the stars". Dr. McLaughlin is seen (*above*) behind Mrs. Omond Solandt, having a word with Dr. Henry Borden. On the facing page, (*top*), Dr. McLaughlin bows to the Chancellor and (*below*) signs the Golden Book.

The photograph at the top of the facing page is by courtesy of The Toronto Daily Star; the one below, courtesy of the Telegram of Toronto. Other Convocation pictures were taken by Bob Lansdale.

For the Chancellor it was, as Dr. Faribault said in his address, a day "marked by its time-honoured ceremonial and its promise for the future". It concluded with a reception at Hart House for Dr. and Mrs. Solandt (*top*), where there was an opportunity for the Chairman of the Board of Governors (*above, left*) to congratulate the Chancellor.

The Chancellor's Address

Omond M. Solandt

Before beginning my more formal remarks, I would like to say how pleased and overwhelmed I am to see so many former teachers, fellow students, colleagues, and friends here this evening. It helps to remove some of the apprehensions of a very serious occasion to know that I am among friends. I must express my gratitude to you for coming, not only to honour a great University, but also I hope to give Mrs. Solandt and me your moral support. We greatly appreciate your presence and good wishes.

I am also delighted and honoured that my first task as Chancellor will be to confer honorary degrees on four very distinguished Canadians. You will hear more about them soon when the President presents them for their degrees. However, since the Chancellor does not get a chance to say much at honorary degree ceremonies, I would like to get my few words in first.

I can claim some significant association with each one of the new graduates. I have known Colonel McLaughlin slightly for several years and admired him from afar for his tremendous contribution to the life of Canada. But my admiration for him goes back far beyond my College years. The first car that the Solandt family ever owned, and by far the best, was a McLaughlin of 1916 vintage. This was one of the great years when Col. McLaughlin still designed the car bodies personally.

Peu de temps apres la guerre, au moment ou j'étais au Conseil de Recherche pour la Défense, j'eus plusieurs fois le bonheur d'être en rapport avec le Secrétaire général de l'Université de Montréal, homme d'une science et d'une compétence à toute épreuve, qui à cette époque jouait un rôle d'une importance primordiale dans l'essor que prenait son université. Aujourd'hui, tel qu'il apparaît devant vous, c'est l'un des promoteurs de la renaissance commerciale et industrielle du Québec, M. Marcel Faribault.

Au moment où je terminais mes études à la Faculté de Médecine et où, grâce à l'encouragement de Dr. Best, je commencais à faire des recherches, il nous arriva un ancien étudiant de l'Université Laval qui venait faire un stage en physiologie générale sous la direction de Laurence Irving. Ce jeune homme, dont le charme et le dynamisme enchantèrent notre département, était le Dr. Louis-Paul Dugal. Nous sommes devenus, lui et moi, de bons amis, et depuis ce temps-là nous avons collaboré à toute une série d'entreprises diverses.

When, just after the war, I ventured into the strange world of government in Ottawa and started work on the Defence Research Board, I soon found that money was hard to get and

that the Treasury Board was the place to look for it. Over many years I regularly tried out new schemes for expenditures on the Secretary of that Board. If he agreed that they were sensible, they nearly always were accepted by the Board. If he was doubtful, I always took them back for another look. Naturally, I have great affection and respect for that Secretary—Bob Bryce—whose ability and integrity have given him a unique position of trust in the government hierarchy. So, you see that even among the honorary graduands this evening, I am among friends.

Election to the office of Chancellor of the University of Toronto is not only a great honour but a very serious responsibility. I can but thank the graduates of the University of Toronto most sincerely for the honour they have done me and assure them that I will do my utmost to deserve their confidence.

Even with the former Chancellors, I find myself among friends. During my two years on the Board of Governors, I have watched with delight the unobtrusive and skilful way in which Dr. Jeanneret brought his wisdom and experience to bear on the problems that faced us. It is no wonder that he has won the devoted affection of several generations of students and staff alike.

When I was a student, Dean Beatty was one of the great figures of the University. We all knew him as a warm and friendly person, an outstanding teacher of mathematics, and a distinguished Dean of the Faculty of Arts. As the first academic to become Chancellor, he brought new and varied skills to the task and did a memorable job.

In London during the war, I was one of the many Canadian service men who enjoyed the warm and friendly hospitality of High Commissioner and Mrs. Massey. Since then all Canadians have watched with pride and admiration his magnificent work as Chancellor and later as Governor General. Fortunately, my various jobs have given me many opportunities for maintaining a valued friendship with Mr. Massey and his distinguished sons. Massey College will always remain as a permanent memorial to his interest in the University of Toronto and to his faith in the importance of the scholarly life even in our modern industrial society.

For me, election as Chancellor also represents an important opportunity. Ever since my undergraduate days, I have felt a deep sense of personal obligation to the University. In the University, I had the good fortune to encounter, as have others before and after me, a dedicated group of teachers. They not only passed on to their students the knowledge and wisdom that they had accumulated during a lifetime, but also were able to transmit some of their own insatiable curiosity about man and his world. I am very happy that several of them are here to share this honour with me. It is sad to think so many have already passed on.

I have always felt strongly that in receiving instruction, the student ac-

cepts a responsibility to emulate his teachers by helping the next generation in any way that he can. Those of us who have not become teachers cannot repay this debt directly in kind, but we can help in other ways. To me, the Chancellorship affords an obvious and entirely unexpected opportunity to make a small payment on the great debt that I owe to the University of Toronto and to its magnificent staff. This I will earnestly try to do during my term as Chancellor, but right now I am faced with the need to make a speech. I doubt if any of you have any idea how difficult it is to choose a subject for an installation address. It would be easy to devote the whole evening to reciting the critical problems of universities in general or the University of Toronto in particular. It would be equally easy and probably more pleasant to spend some time eulogizing our Canadian universities because, in spite of all their problems, we can well be proud of them. However, I have another message for this evening so will just give passing reference to a few of the most interesting and important problems that face the universities today.

Among these, the most conspicuous is the growth in demand for higher education. Canadians are now beginning to realize that, in the modern world, investment in education is a very "good thing" not only for the individual but for the nation. Because of this, the demand for university education is increasing faster than ever before. Governments at all levels are making a real effort to expand their support to keep pace with this growing need. If you want the best available forecast for the magnitude of the demand and a lucid discussion of the alternative ways of meeting it, you must read the very recent report on "Financing Higher Education in Canada", which was written by Dean Bladen, Dr. Dugal, Senator McCutcheon, and Chancellor Ross of McGill.

The rapid expansion of the universities poses not only financial and physical problems but also social and organizational problems. Canadian universities have long been governed by a complex hierarchy consisting of a Board of Governors, composed of prominent citizens from outside the university who are responsible for finance, building and general management; a Senate, representing the faculty and often the graduates, which is responsible for all academic matters; and the President, who is the chief executive of the institution. It has become increasingly clear in recent years that the dichotomy of responsibility between the Board of Governors and the Senate or faculty has been too complete and that there must be better communication and closer co-operation between the two. With the establishment of the President's Council, the University of Toronto has already taken a major step toward broadening the channels of communication and I am sure that this University will continue to take a lead in the evolution of the mechanism of university management in order to keep pace with the changing needs.

The role of the student in the uni-

Dr. Omond M. Solandt is vice-president, research and development and a director of the de Havilland Aircraft of Canada Limited and Hawker Siddeley Canada Limited and chairman of the DCF Systems Limited.

After he earned his M.D. degree at University of Toronto in 1936, Dr. Solandt spent a year in research on experimental pathology at Cambridge University; interned in the Toronto General Hospital; did postgraduate work at London Hospital and returned to lecture at Cambridge.

After the outbreak of war he was appointed director of Britain's Southwest London Blood Supply Depot. He founded the Medical Research Council's Physiological Laboratory at the Armoured Fighting Vehicle School at Lulworth, England, and became active in research in tank design and the physiological problems peculiar to tank personnel. In 1942 Dr. Solandt turned to the then new field of operational research and formed the Armoured Fighting Vehicle Section of the Army Operational Research Group, becoming its superintendent in 1944.

In 1945 Dr. Solandt was sent to Japan by the War Office as a member of a mission to evaluate the effects of the atomic bomb. He joined the Canadian Army in 1944 and left as a colonel in 1946. He then began plans which resulted in the formation of the Defence Research Board and became its first chairman and the scientific member of the Chiefs of Staff Committee and Defence Council. In 1956 he resigned to become vice-president, research and development of the Canadian National Railways, leaving in 1963 for his present positions.

Dr. Solandt has received many honours: the O.B.E. and the U.S. Medal of Freedom with Bronze Palm; honorary degrees from the Universities of British Columbia, Laval, Manitoba, McGill, St. Francis Xavier, Dalhousie and Toronto; the Gold Medal of the Professional Institute of Canada, 1956; the Civic Award of Merit of the City of Toronto, 1961; and honorary membership in the Engineering Institute of Canada.

He has been a member of the University of Toronto's Board of Governors since December, 1963. He is a governor of The Arctic Institute of North America, a director of the 1967 World's Fair, a Fellow of the Royal Society of Canada and a Fellow of the Royal College of Physicians.

As Chancellor, Dr. Solandt succeeded Dr. F. C. A. Jeanneret, who had held the office since 1959. Since Sir William Mulock's twenty-year tenure, from 1924 to 1944, chancellors have been: Hon. H. J. Cody, 1944–47; Rt. Hon. Vincent Massey, 1947–53; and Dr. Samuel Beatty, 1953–59.

versity is also changing. When I was a very young lecturer at Cambridge, I strongly supported the concept of the University as a community of scholars. Students were invited to share briefly in the delights of this community or to remain as scholars in it if that was the way their interest lay. The idea that the students might tell the scholars how to run their community did not then enter the heads of either students or scholars. Now there is a growing ferment on university campuses everywhere as students take a more active interest in politics and also insist on making their views on university operation heard. Here again, I think that we in Toronto are meeting these problems intelligently and effectively. Members of the faculty and the Board of Governors are very much aware of the importance of finding out what the students think of university operation and teaching. Clearly the students have an important contribution to make and they should be encouraged to make it. In the jargon of modern management science, a good channel of communication from the students back to the teachers and the administration is an essential "feedback loop" in the educational system.

Within the University, a major problem is seen in the need to regroup knowledge into new "interdisciplinary" areas for teaching and research. There is nothing sacred about the labels "Chemistry" and "Physics", or even "History" and "Literature". Undoubtedly, many of the old departmental boundaries will disappear and new ones will appear. The University is a living organism and even its structure changes as it grows.

But that is enough about universities. I want now to speak briefly about some other matters that also seem to me to be of commanding importance in the world today.

Even the most dedicated supporter of the "good old days" would agree that we are now living in the most exciting times in the whole of human history. The search for new knowledge, particularly of the physical world, has become a major occupation in universities, government institutions, and industry. Because of this, our knowledge of our environment is expanding faster than ever before. The rapid conquest of space in the last ten years is the most spectacular but probably not the most important result of this new knowledge. With the rapidly expanding knowledge has come a host of new problems which are serious enough to undermine or destroy our whole civilization.

Mankind has naturally sought to apply his new knowledge to the full range of human activity. New scientific knowledge has been applied both to the production of the goods and services needed for a normal peaceful life and also to the perfection of new weapons of war. Curiously enough, the successes that have been achieved in both directions threaten our civilization.

Let us look first at the problems of our normal commercial and industrial economy in North America. Throughout the brief history of European

settlement in North America, man has continually exercised his intelligence and ingenuity to find ways of reducing the backbreaking physical toil of wresting a living from the wilderness. Even in the days of our grandfathers, most people spent their lives in hard physical labour on farms, in forests, mines, and factories. Now man's efforts to reduce labour have been so successful that he is faced with the bogey that we call automation. Pessimists feel that our efforts to eliminate labour have been so successful that they will lead to widespread unemployment. There certainly is a real problem here but I don't believe that we will find effective solutions to the problem if we regard it as one of automation. So far the results of automation have been mainly good, not bad. I am sure that a careful analysis, if it could be done, would show that automation has created more jobs than it has eliminated. Our real problem is not automation but affluence—affluence that flows from the increased productivity that results from automation.

Through most of North America, and probably especially Canada, where the frugal traditions of the French and the Scots are still powerful, men believe that hard work is good for the soul and that the devil finds work for idle hands. We are now entering a phase in human evolution where we think that we can foresee the day where a fraction of the population working for relatively short hours every week can produce all the goods the rest of us can consume. The problem is not how to stop this spread of automation and limit the production of goods, but rather how to make the economic and social adjustments needed to enjoy our new found leisure and affluence. The industrially advanced Western nations will not find this an easy task. Fortunately for us in Canada, the advent of the problems associated with widespread affluence will be slower here than in some other nations and so we will have more time to make the adjustment and to profit by their experience. Two major factors than can be advanced to support this optimism are, first, Canada is still an underdeveloped country and even with rapidly increasing productivity, we can find employment for an increasing labour force by the rapid expansion of industry and development of resources. Second, the most important problem in the world today is the elimination of dire poverty in the "have-not" nations. We can and must make an increasing contribution toward this goal. This essential task can help us to maintain full employment during the social and economic adjustments needed to attain a stable affluent society.

It is almost fashionable now to be pessimistic about the effects of man's new knowledge on his social progress. I don't believe that this is a fair assessment of the situation. Although our new knowledge has brought great problems, it has also revealed even greater possibilities. Until recently, there was real doubt that the nations of the world could even all achieve even an adequate food supply. Throughout a great part of the world,

population was growing faster than food supply and continued famine and pestilence seemed inevitable. Now we can say with confidence that there is no doubt whatever that it is physically possible for everyone in the world to live in comfort, free from famine and disease. The means for controlling the population explosion are already within our grasp. When this is done, the problems of eliminating starvation and disease are clearly soluble, and the means of production available will be adequate to provide the citizens of every nation with a material standard of living far beyond that which they now enjoy.

Unfortunately, man's knowledge of the material world and his ability to apply this knowledge to the solution of physical problems seems to be far outpacing his understanding of the social and political problems of living together peaceably in order to make effective use of this new-found abundance.

The success that man has achieved in the application of his new knowledge to the evolution of complex and devastating weapons systems has been spectacular and alarming. Russia and the United States now have more nuclear weapons and the means for delivering them than would be needed to achieve virtually complete destruction of both countries.

The power of the offensive in strategic warfare has vastly outstripped the defence and this is likely to continue for many years. As a result, the only credible defence against strategic nuclear attack is retaliatory power which will clearly survive an initial attack. For many years the possibility of total nuclear war seemed fairly imminent. At the moment, it has receded a little into the background. The two major nuclear powers seem to see very clearly that no one would win a global nuclear war. At the same time, the alignment of nations in the world appears to be slowly changing in a way that has long been foreseen and predicted by many students of world affairs. Russia is rapidly becoming one of the "have" nations. I have been in Russia twice – once in 1935 when the dire poverty of the masses and the high living of the ruling class seemed little changed from the Tsar's days. The second time was last year and, at least in the industrial cities, it was clear that Russia has already become an affluent society. It seems likely that the Russians will become increasingly preoccupied with the problems of affluence and will find themselves with more in common with the Western world than with the "have-nots" of the East. The world will swing into a new alignment of the "haves" versus the "have-nots". Unfortunately, the line between "haves" and "have-nots" also corresponds quite closely with the line between white and coloured people. Consequently, success in avoiding a nuclear war in the future will depend more and more on the success of the efforts of Russia and the Western world to help the rest of the world out of poverty and on the road toward affluence and on our ability to cooperate peacefully with people of other colours. Unless we can succeed

in bridging the gap between the Western World and China, the emerging nations of Africa, and even India and Pakistan, hopes for continuing world peace are poor indeed.

What I really want to emphasize today are the privileges and responsibilities of being a Canadian in this difficult, complex, but wonderfully exciting world.

If you believe in a divine power guiding the world, and most of us in Canada do, then you must agree that this power has endowed Canada with almost everything needed to achieve a happy and successful life.

We have been given tremendous natural resources, a very fine people and a great heritage of two basic cultures. We have inherited and evolved an excellent system of government and of law. We live next door to the greatest and best neighbour in the world, and, in addition, we have many good friends in more distant parts of the world. We live in a great land which should, and must, breed a great people.

I am one of the fortunate Canadians who has the privilege of knowing Canada fairly well from St. John's to Victoria and from Windsor to the Pole. It is a magnificent country with everything that man could desire except a tropical climate. We have tremendous mountains, mighty rivers, vast plains, immense forests and to the North, the barrens and the Arctic islands. Not only is it a fertile land that will feed us well and allow us to help feed the world but is also rich in the natural resources needed by industry and in water which is so essential. Above all, it is a vast, uncrowded land where men can find solitude when they need it. We have never experienced the over-crowding of the older nations and so do not adequately value the spaciousness of our land. Anyone who has seen and understood Canada must recognize that merely living in Canada is a rare privilege and a great responsibility.

With all these natural endowments, Canada has a unique responsibility toward the whole of mankind of showing that the problems of the modern world can be overcome and that men can live together in peace and prosperity. For, if Canadians with all these advantages cannot achieve successful nationhood, what hope is there for any other country in the world.

First, we must confidently and effectively tackle the problems that confront us in our own land. I sincerely believe that Canada can show the world how to cope with the problems of automation and affluence. We can eliminate poverty and the concept of unemployment. This will not be easy and will even require us to change some of our basic social values. This can and will be done while retaining the important values of a basically Christian society. The present problems between French- and English-speaking Canadians are complex and difficult but they are soluble. French and English share equally the responsibilities that I have described and I am sure they also share similar visions for the future of Canada. I hope that one of the important bene-

its that will flow from our present problems will be the growth of a tradition of a bi- or even multi-lingualism in Canada which will help us greatly in the international role that we must play. Like so many of my generation who were brought up in Toronto or in the West, I can only apologize for my inability to speak French though I can read it well enough to have some idea of what I am missing. I have had the good fortune to spend a considerable time in French-speaking parts of Canada and have only admiration and affection for the French-Canadians whom I have come to know. Canadians whose native tongue is English or Italian or German or even Indian or Eskimo need have no doubts about the competence or the willingness of the French-speaking population to play their full part in the formulation and achievement of our hopes for the Canada of the future.

While the effective solution of internal problems is necessary to the success of the nation, this should be regarded as only a means to an end. Canada's principal role in the world must be to continue and greatly increase our efforts to help others out of poverty. In doing this, we must be careful not to force our concept of the affluent society on the newly developing nations. We should help them to eliminate poverty and disease and to improve education so that they can evolve toward their own goals, which are not necessarily the same as ours.

Science has now shown that the traditional spectres that have haunted man over the ages — overpopulation, famine and pestilence can be laid forever. This possibility can be clearly envisioned but war could completely stop even our present halting progress toward it. Global war must be prevented while mankind works toward the elimination of poverty. The threat of nuclear destruction is so real that man must surely soon begin to see that he can live peacefully in a world ruled by some sort of world government with at least a basic code of world law. I am certain that this goal will be reached. It may take several generations of peaceful evolution or may be forced on us quickly by a renewed threat of global war.

In all of this the University of Toronto has a central role to play. The University is primarily a community of scholars, a place where intellectual leaders can study the past and the present and chart courses for the future. The University acts as the focal point of knowledge and for the education of the leaders of the future. The University must be a centre not only for the evolution of new knowledge about the physical world, but especially for the development of an understanding of social and political problems that can lead to the peaceful evolution of Canada and of the world. I hope that every student that leaves the University will go out with a firm conviction that merely to be a Canadian is a great privilege that carries with it tremendous responsibilities. The world is counting on us to succeed and to help others toward success. We cannot and will not disappoint mankind.

The University and I

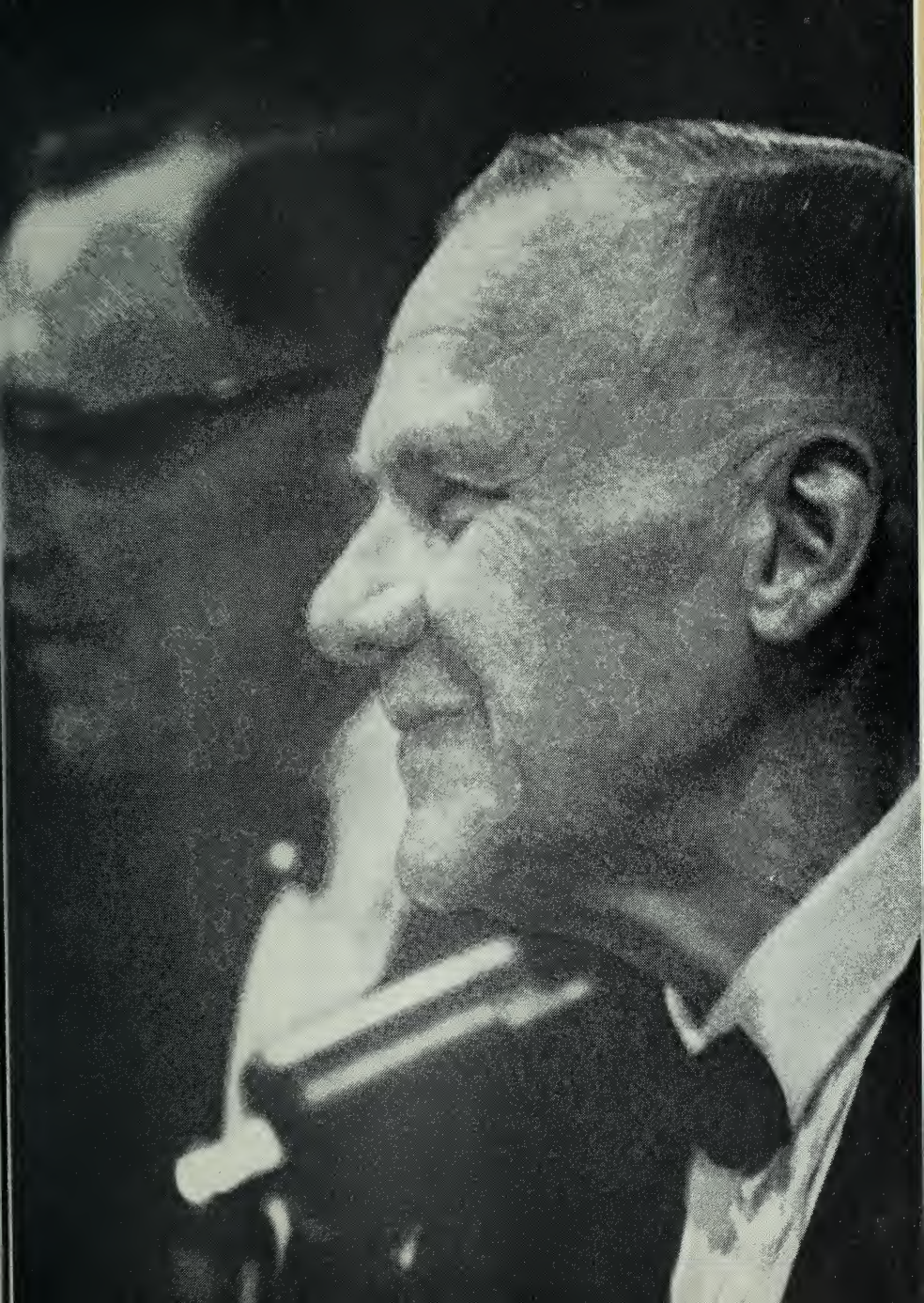
F. C. A. Jeanneret

I know that I will be forgiven if after fifty-seven happy years of unbroken association with this University, to which I have come to enjoy a certain sense of belonging, I admit that I anticipate many moments of nostalgia in days to come. But even these will be taken care of, as more than half a century of devotion has demonstrated, by the one to whom I owe so much.

My older colleagues will remember that on occasions such as this, it was once our custom to let a departing brother talk for several hours, provided he would speak only of himself and tell nothing but the truth. The modesty of some reached its acme, hence not to be emulated this evening. W. J. Alexander, as great as any in my time, the magnet that drew many of us to this University as students, told us that the only really important contribution he had made to the institution was the appointment of Malcolm Wallace to the staff in English. That transplanted Oxonian, Maurice Hutton, a most distinguished classicist, gave as his apologia for what he termed his seeming disregard of his duties as a College official, his deep-rooted conviction that there never should have been an appointment such as that of Principal of University College, and he was determined to prove that it was superfluous. Some there were among these elder academic statesmen who imagined they were at the confessional and felt under compulsion to recite incredible instances of youthful indiscretion, which I would not venture to repeat, even in this uninhibited age; and some pleaded guilty to more mature criminal tendencies toward senior departmental colleagues. A few, very few indeed, revealed that they had always felt totally unappreciated by the University community, with the exception of their own wives, and then enumerated at length their unparalleled claims to greatness in their particular fields of scholarship. For some reason or other, this type of farewell banquet fell into disfavour.

I shall not consciously attempt a

Dr. Jeanneret's address, above, was given at a dinner in his honour shortly before the end of his second three-year term and retirement as Chancellor earlier this year. *Facing page*: with light and shadow, and a pinch of witchcraft, Bob Lansdale captures the spirit of an evening that belonged to Dr. Jeanneret while it signalled he would soon be succeeded by Dr. Solandt.



complete revival of any of these styles, though I suspect I may use the first personal pronoun at least twice on an average in each sentence I utter. You will note my transparent humility, however, if I tell you that the subject on which I propose to speak will be "the University and I", with "I" as far in the background as possible, in the title at any rate, modelled on that of a popular novel of a decade or so ago, which I never read but which my wife related to me, entitled "The Egg and I".

My first panoramic, or any other, view of the University was in September 1906, from the tower of what was then officially called "The Main Building". A group of us, all about fifteen years of age, had come from our little village of Elmira to attend the National Exhibition, and we were anxious to take in all the high spots, such as the towers of the City Hall and of the University, from both of which we could see most, if not all, of the city. There were then only six or seven buildings on the "main" campus, and as our attention had not been drawn to the sister colleges in the distance, we returned home totally unaware of their existence. It is true that we were equally unconscious then of the entity known as University College. And, if I may interject, were I at the confessional now, I should feel bound to tell of the vow I made to myself six years ago, that throughout the term of my present office I would play no favourites in the matter of colleges. I would even keep away from University College, partly to avoid getting in the hair of my successors. I have paid dearly for that vow. When, after an absence of only six of my fifty-seven years, I returned to University College a few weeks ago to lecture on Sir Robert Falconer, another "has-been", I am certain that not more than forty per cent of the present staff even recognized me and, more naturally, none at all of the student body except my grandson. By the way, I am not sure that this is the sort of thing that is normal usage in the confessional. Probably not, judging from a description once given to me by a most respected reverend father. He told me of a senior priest who was listening in a while a younger member of the clergy was taking his first confession. At the conclusion, when the neophyte asked the elder father how he had done, the latter replied: "Fairly well, but I would suggest that you should not have whistled as you did periodically while the young lady was making her confession."

But I am getting a way ahead of my story. When I came to the University as a student in 1908, I registered in six honour courses at the outset, had to drop two on the way, philosophy and classics, because of time-table clashes, but managed four throughout (they overlapped a little) and wrote twenty-six examinations in my final year, only to regret for the rest of my days that I had not specialized more intensively. I did not repeat this error in my graduate studies at University of Chicago or at Ecole des Hautes Etudes in Paris.

Among my red-letter undergraduate days the reddest was one Saturday in November of 1910 when, with one dollar to my name, I went along with classmate Roland Daly, who also had one dollar, on the good ship *Macassa* to Hamilton at a bargain rate of seventy-five cents return to see our Varsity football team win the Dominion Championship over the Tigers. Of course, the remaining twenty-five cents wouldn't get one inside the gates even in those days; so we just stood in front, hoping and praying. Providence was good. The huge gates of the show-grounds opened wide and we were simply swept off our feet and inside by the mob behind, much against our resolute wills and tender consciences, and had the best standing room on the grounds throughout the greatest game in my memory—and twenty-five cents left over for fish and chips. What a day!

Teaching has proved a most rewarding career, not necessarily in a monetary sense, in my time at any rate, but in every other respect, and I would urge as many young Canadians as possible to choose this as their vocation. There is more real satisfaction to be obtained in "teaching the young idea how to shoot" and in watching the subsequent progress of your thousands of students than many people suspect. Merely to demonstrate what I mean, I am going to be unusually indiscreet and mention just two names, of youngsters, ten or fifteen years my juniors, who were both among my students in one of my first-year classes, and with both of whom I found myself by mere coincidence at a small dinner-party the other evening, forty-five years later. One took his French so seriously that on graduation he went to study in France for several years, and then returned to be my first appointment to the staff. He is still with us today, despite many invitations to go elsewhere, and is probably our most versatile exemplar of the humanities, in poetry (two Governor-General's prizes), in music, in painting, in the theatre, etc. etc., but above all as an oustanding teacher in the field of the French language and literature: Professor Robert Finch. The other, at least equally distinguished ex-student of the same class, Gold Medalist in fact, kept working away at his French after leaving College and used it subsequently to such extraordinary advantage in parliamentary debate while he was Minister of Finance and later of Justice. He is still badly needed at Ottawa (with no disrespect to anybody intended). The Donald Flemings are rare indeed! But please believe me when I say that I am totally innocent of any interest in party politics.

Now that I have reached the teaching, and most important, phase of my life's story, I should like to mention just three innovations introduced during my régime (excuse the undemocratic word!). These were carried out with the characteristic co-operation of the best team of colleagues that ever went out on the field. The

(Continued on Page 105)

Tokyo hos

Above: Early in the autumn, many of the world's best known educators visited Japan for the 4th general conference of the International Association of Universities. Here they are seen in the Yasuda amphitheatre of Tokyo University.

Left: One of the delegates from Canada, Mgr. Louis-Albert Vachon, Rector of Laval, is photographed at Keio University, Tokyo.

) university leaders

Right: A visit to the Rikugien Gardens in Tokyo was one of the outings arranged for delegates. Strolling with Dr. Claude Bissell is Professor J. S. C. Cobbold of University of Saskatchewan. The next plenary sessions of the association are scheduled for 1970 in Montreal.

President Malcolm Taylor, of the University of Victoria, joins students on the campus of Keio University, Tokyo.

Above: President Murray G. Ross of Toronto's York University encounters Dr. and Mrs. Joseph E. Dellen, two friends of long standing. Stationed in Tokyo, Dr. Dellen is director of University College, Far East Division, University of Maryland. *Below*: At left is Dr. William M. Sibley, Dean of Arts and Science at University of Manitoba, and at right President Walter H. Johns, University of Alberta, Edmonton. Both were photographed at Keio University.

Visiting the garden of Imperial Palace, Tokyo, Dr. Bissell is photographed with President Kikushiro Nagata, at left, and Professor Shigene Kanamaru, both of Nihon University.

Founded in 1889, Nihon has 67,498 students enrolled in 11 colleges.

A HEADLESS ANGEL on the wall of New College, University of Toronto, is a link with New College, Oxford where — set in an outside wall — it defied the elements for nearly 300 years. "I am very touched, I must say, to see that battered old bit of stone," said Sir William Hayter, *above right*, Warden of the Oxford college (founded in 1379) when he opened the Varsity college headed by Principal Donald Ivey, *left*.

Presenting Sir William with a gold key at the opening ceremony, Dr. Ivey said that quite apart from welcoming Sir William as the representative of Oxford's New College he was pleased to welcome him for himself.

"Sir William," he continued, "graduated from New College in Classics, and has had a very distinguished career in the Foreign Service, serving in many parts of the world — Vienna, Moscow, Washington, China. He has been H.M. Minister in Paris and was Ambassador to the U.S.S.R. from 1953 to 1957. He was Deputy Under-Secretary of State in the Foreign Office before becoming Warden of New College in 1958. It is not surprising that he is considered, and consulted, as an expert on international relations.

". . . We are proud to bear the name New College not because we aspire to emulate New College, Oxford in detail or really in any way except one: we admire the distinguished tradition of scholarship of that foundation, and we sincerely hope that in some small measure we can develop such a tradition."

In his address at the opening of New College, U of T, the Warden of New College, Oxford, offers "horrible warnings of things to avoid"

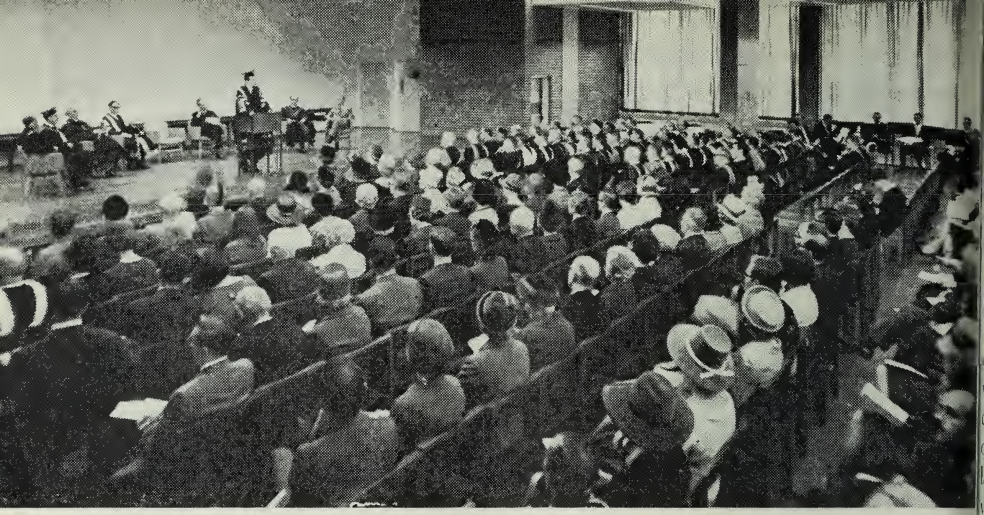
"Bad Patch" Ends After 300 Years

WILLIAM HAYTER, K.C.M.G.

THE OLDEST New College and the newest New College are different institutions in many ways. We have some things in common; we are, for instance, both of us an integral part of a great university and perhaps, if no one else is listening, we can say that we are integral parts of the leading universities in our respective countries. The course of our history is different in length and may well be different in kind. It perhaps may be of some interest to carry a little further the story of the history of the other New College, because it may have some lessons for this New College — lessons I am sorry to say in the main not of examples to follow but of horrible warnings of things to avoid.

Our founder, William of Wykeham, was a remarkable man, a self-made man, the son of poor peasants who, entirely by his own energy and intelligence, got to the very top, as far as anyone could of those days in England. He became one of the richest men in the country and the way you did that then was by becoming a bishop. He also became Chancellor, which was the nearest equivalent they then had to being Prime Minister and, having achieved this position, he founded two institutions, Winchester College, which is in many ways the beginning of what's called the public school system in England, and New College, Oxford, of which I have the honour at present to be the head.

Well now, in founding New College he did us very well in many ways. He gave us endowments. He gave us buildings, which I don't think you need to envy when I look round at this magnificent building, but which were indeed, as this building is, very functionally designed. That is not only, so to speak, the grand parts of the building put up nearly 600 years ago, but which still serve their purpose; not only the Chapel and the Hall, not only that I sit in the study where the Wardens of New College have sat since the late 14th century in the same room; not only did he design my house in such a way that I can keep a sharp eye on everything that goes on in the College — and this is strict functional design — but even the kitchen and even — if I might mention it — the lavoratory, are still the ones that he designed for us, though these have been re-equipped, I must say.



PRESIDENT CLAUDE BISSELL (at the rostrum *above*) presided at the opening of New College on the last day of September, in the dining hall of the College. "The building we open today," he said, "has, of course, a slight history. But it falls heir to a great deal of the history of this University. These ceremonies will recall the establishment in 1853 of University College as the teaching arm of the University — and they also invite us to throw our minds back to the decade following the Federation Act of 1887 which ushered in the period of collegiate diversification."

DR. D. R. G. OWEN, Provost of Trinity College, extended good wishes on behalf of the Federated Universities and pledged their co-operation "to our young and beautiful sister". "There was a time not so long ago," he continued, "when I would have hesitated even more than I do now in presuming to speak on behalf of Victoria College and St. Michael's College as well as Trinity, but in this ecumenical age things are happily different . . . I have heard it said that Trinity's intransigence in refusing to expand beyond rather a limited total was one of the factors in the decision to establish additional colleges. . . . I can only say we are most happy to have played even this ambiguous role in the reproductive process."

PROVOST M. ST. A. WOODSIDE, speaking on behalf of the University and of University College: "The minds of all of us dwell affectionately and gratefully on the College's first Principal, the late Frank Wetmore, who loved the infant College dearly, as we all loved him, and who laboured perhaps too devotedly for it. There are many things about New College which are old — for example, the scholarly tradition that goes back by a twisty pedigree to Plato's Academy. There is also the tradition . . . that students enrolled in the Faculty of Arts and Science are, each, members of a College community. But there is something which is very new. New College is the first college to admit students of other divisions of the University as full members of its community."

Other members of the platform party were the Chancellor, Dr. O. M. Solandt; Principal Donald Ivey; Rev. James S. Cunningham, Chaplain to Hart House; Robert Fairfield, the architect; and L. J. McGowan, of Taylor-Woodrow, contractors.

In this respect this great man did us very well.

He also drew up extremely elaborate statutes for us and here a slight note of doubt must creep in. These statutes are in many ways very well designed to carry out the purposes he had in mind but they perhaps went into excessive detail and were excessively rigid. Every single detail of the life of the College and all its members was worked out down to the last possible comma. Now this is conceivably a root of some of the things that went wrong later. These statutes were no doubt very well designed for the day when they were drawn up and, indeed, in the early days of the College it produced a number of distinguished men and played a distinguished part in history.

But unfortunately, either because of the statutes or for some other reason, it became rather – how shall I say – I don't like perhaps to use the word conservative because you are in an electoral period here, so if I do use it I use it strictly with a small 'c' – you must understand that. But at any rate we did get rather stuck in a kind of groove. For a long time, nothing happened. A kind of flat, dull calm set in and there was indeed a rather unkind saying about New College, "that it produced golden scholars, silver bachelors, leaden masters and wooden doctors," and this kind of situation of a sleeping beauty went on for something like 300 years. Then about 100 years ago we emerged from this condition, changed our statutes and became again a distinguished institution and played an active part in the life of the university and indeed, to some extent, in the life of the nation.

For instance, until quite a short time ago we had a majority among the lower Lords, that is to say the equivalent of the Supreme Court, so that if anyone had taken us to law we should have been in a strong position. We also have numerous members of the present government. If it had not been for the untimely death of Hugh Gaitskell we would have had a New College Prime Minister and even the present Prime Minister was allowed briefly to teach at the College; and, of course, there are many distinguished men in this country who have passed through our gates. One member of the present government, several of your ambassadors, a Supreme Court Justice, and so on.

I say all this not to boast but to show that it is possible to emerge from a bad patch even if that bad patch lasts for 300 years, but of course it is better still not to get into a bad patch, better to avoid it if you can and this in a sense is where the awful warnings which I mentioned before comes in.

What went wrong? As I said, we did become too conservative with the lower 'c', we did get into a state of mind in which innovation ceased to matter and this was in a way rather surprising because we were, as the Principal has told you, something of an innovation ourselves when we were founded.

The founder was himself a great innovator – there are various features

in his foundation which were very much ahead of their time and have been fruitful in future years in our country. The detail of the statutes was the origin of the tutorial system which is the essential feature of education that is still given at Oxford and at Cambridge. He invented the kind of layout of colleges which has been repeatedly reproduced elsewhere. Indeed, I saw the latest example of one of his inventions only yesterday at Massey College. One of the things that he did first, and many colleges have subsequently done, is to place the main room of the head of the college over the main gate and I saw that appearing again at Massey College in this university. He built the building in the perpendicular style of Gothic architecture, which was as modern and up-to-date then as the style of this building is now. This was the reason why, being such an innovation, we were called New College and a certain amount of other innovation went on. Greek was first taught in New College at Oxford and this was a very liberating innovation in those days — it got English education out of the shackles of the Middle Ages. Then somehow this spirit was lost, it disappeared, we ceased to want to innovate and we then became a very undistinguished body.

It must seem very odd to you that someone should come to this country and talk to you about innovation; should come here from tradition bound England, but I think it is something we need to reflect upon. You after all are in a country where innovation seems natural, you are making many all the time, one only has to look around this campus to see how many, and it must seem odd that I should want to talk to you about that.

The only reason why I do is this — that here was a body which in its day was a great innovation and yet somehow lost the capacity to innovate. This meant that it lost its whole function as an educational institution, that it ceased in that pursuit of excellence which we all know is the primary function of all educational institutions. It is all the more important, I think, that we, and you, should concentrate on this idea of innovation because we have given ourselves this name that we have in common. It is no good calling yourself a New College if you become fusty and old.

There must have been many times in those 17th and 18th century days when anyone looking at New College and hearing it was called New College must have felt pretty sardonic about it. I hope that you will never yourselves here feel this kind of sardonic gaze bent upon you. I hope that you will always be able to keep alive this idea of innovation which is, after all, firmly contained in the name which we had, so to speak, thrust upon us as a kind of nickname, but

Facing page: Behind Sir William Hayter and Dr. Ivey is New College, first of Varsity's multi-faculty colleges, with a current enrolment of 1,230 students, 830 of them in Arts and Science, the remainder in professional faculties. A residence for women is planned that will enclose a future quadrangle.

At the New College opening reception, senior students enjoyed a chat with the new Chancellor. *Left to right*: Andrew Krumins, Elizabeth Pickett, Dr. Omond Solandt, and David Hunter.

which you have deliberately chosen for yourselves. Having chosen it, you have dedicated yourselves to the idea that you must go on doing new things all the time, that you must never allow yourselves to get into a rut or a groove as we did.

If you have done the sum you will see that in a few years' time we shall be approaching our 600th anniversary. I hope that when you come to your 600th anniversary and look back on those years you will be able to do so (that is, your successors will be able to do so) with less mixed feelings than we have when we look back on ours. Our story had a happy ending but there are chapters in the middle we would rather forget. I hope you will be spared those chapters. I am sure from all I have seen since I have been here that the plans are being laid in such a way that you should not have to have that feeling.

I am sure that starting as you have begun, building on the foundations that have been laid, enjoying these splendid buildings, you will keep alive the spirit of innovation, this pleasure in things that are new. If you do that, one can have great confidence in your future and it is therefore with the very greatest confidence and with great pride that I have the honour officially to declare this building open. *(Text transcribed from a recording.)*

EXPLORATIONS

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POWER: NUDE OR NAKED

SHEILA WATSON, *Department of English, University of Alberta*

At the beginning of *Sartor Resartus* the editor of Teufelsdröckh's papers remarks with surprise "that hitherto little or nothing of fundamental character, whether in the way of Philosophy or History, has been written on the subject of Clothes." Clothes, he remarks after dismissing the "owl's-glance" of some "broken-winged" thinkers into this obscure region, have been regarded "as a property not an accident, as quite natural and spontaneous, like the leaves of trees, like the plumage of birds." Although man's whole life and environment, including every fibre of his body and soul, have been "probed, dissected, distilled, desiccated, and scientifically decomposed," man has "figured tacitly as a *Clothed Animal*; whereas he is by nature a *Naked Animal*; and only in certain circumstances by purpose and device, masks himself in Clothes."

Montaigne had argued as much in *The Apology for Raymond Sebond.* Here in answer to the Epicurean complaint that man is the only animal abandoned naked on the naked earth with nothing to cover him except the spoils of others Montaigne observes that man's skin is as adequately provided with endurance as the animal's. Only custom makes impossible a condition which is not impossible in itself. In his essay "Of the Custom of Wearing Clothes," he remarks, too, that man, like the animal, is "furnished with the exact amount of thread and needle required to maintain his being." "We have," he says, "extinguished our means by borrowed means as artificial light extinguishes the light of day." Wherever man turns to find what is *natural* some "barrier of custom"—or costume—blocks all approaches. Only that life which the Greeks called *zoe* in opposition to "characterized existence" which they called *bios* appears to him as *natural.*

Although Montaigne suggests that costume can destroy what it invests and that consciousness is modified by the images which the mind projects his speculation

is limited by secular prudence. He is not haunted by the thought of a radical mutation of the natural human integument as Wyndham Lewis is when he speaks nostalgically in an environment subject to the hazard of atomic fision about the warmth and resilience which makes "skins . . . so high class a covering for man to have."

Swift, in what Sir Kenneth Clark calls his "famous defense of Delusion," is closer in his attitude to Lewis than he is to Carlyle, who depends for the literal level of his analogy on the anatomists. "Last Week," Swift writes in "A Digression on Madness," "I saw a Woman *flay'd*, and you will hardly believe how much it altered her Person for the worse." Immediately, too, he amplifies his point: "Yesterday I ordered the Carcass of a Beau to be stript in my presence; when we were all amazed to find so many unexpected Faults under one suit of Clothes." His reminder is addressed to a world which is becoming in its reaction almost wholly visual.

Sir Kenneth, who defines the nude in opposition to the naked as "a form of art" and again as "the most complete example of the transmutation of matter into form" says that the classical ideal "has been more protective than any drapery; whereas the shape of the Gothic body, which suggests that it was normally clothed gave it the impropriety of a secret." He is repelled by the unclothed Gothic figures because they remind him of roots and bulbs. They suggest the slow biologic groping that makes bulbs shamefully "baggy, scraggy, and indeterminate." The body of Eve on the lintel of a door from Autun, Sir Kenneth says, is represented as "an unfortunate accident of the human condition, and instead of being presented as the summit of visual experience, is made to go on all fours with ornamental leaves and fabulous animals." There is no doubt that Sir Kenneth prefers the body clothed, at least visually, in a garment which he calls the nude.

Because of his conviction, however, that drapery is a sign of "the inhibition which oppresses all but the most backward people" he is unable to develop his initial intuition that the formal nude to which he is attracted is a ritual type which reconciles several contrary states. So sure is he that clothes are a mask which conceals and destroys he fails to take into account even the iconographic tradition in which, according to Edgar Wind, "a triad of naked figures" representing the three Graces replaced a triad of clothed figures as a relatively late invention in the tradition which Sir Kenneth himself approves. Only prudery Sir Kenneth thinks could have invented the figures as they appear clothed in the Middle Ages and Early Renaissance—especially in the persons of "three nervous ladies hiding behind a blanket."

The conviction that his clothing is a "false Covering" is Gulliver's last step towards misanthropy and total madness. For him the physical truth of the

Yahoo becomes the naked iconoclastic truth which finally transforms the world into a *peau de chagrin*. In the Yahoo Gulliver sees with outraged clarity the "wrinkles, pouches, and small imperfections" which Sir Kenneth Clark, thinking sadly of the artist's model, says cannot be made into art by direct transcription —"like a tiger or a snowy landscape."

When Gulliver refuses to strip himself completely his Houyhnhnm master rebukes him for his prudery. The Grey Horse, Gulliver says, "could not understand why Nature should teach us to conceal what Nature has given." With a physical shudder, however, Gulliver demonstrates that his clothing protects him by conserving his energy. Eric Neumann's comment on the cultural symbols of protection connected with the cult of the Great Mother suggests that Gulliver's reaction is more primitive in its simplicity than the Houyhnhnm's rational naturalism. Such covering as shirt, dress, coat, veil, and finally shield, Neumann says, are connected with the protective image of the "Mother pot." In German, he goes on to say, "words as *Höle*, 'cave'; . . . *hohl*, 'hollow'; *Halle*, 'hall'; *Hülle*, 'covering'; *Hülse*, 'husk' or 'pod'; and *Helm*, 'helmet' derive from the root *hel*, 'shelter'.

There is more than a superficial connection between Wyndham Lewis's suggestion that he "preferred a helmet to a head of hair" and his final meditation on the function of skin. Writing about the royal headgear of Sumer and Egypt Rachel Levy observes, "The imposition of the Crown was not the creative act of the coronation ceremonies in Egypt and elsewhere . . . Only after his rebirth as God, by the ancient and universal rites, can the magic enclosure protect his head. The lofty cone of the Double Crown is definitely shown to be a cavern-form of the Mother Goddess who shelters him when new-born in death."

Shakespeare, as Ernst Kantorowicz points out in his discussion of *King Richard II*, explores not only the complex reactions of the body of flesh which Richard speaks of as walling about life, but also the constructs by which men contract, compound, control, or extend their power. One of the objects on which he particularly dwells is the physical symbol which hedges the corporate power of the king. The Fool in *King Lear*, who has much to say about Lear's divesting, speaks from the centre of iconographically ordered experience when, pointing to Lear, he remarks to Goneril, who appears before Lear wearing an insubstantial but menacing "frontlet," "That's a sheal'd peascod."

Swift moves consciously in the same labyrinths of thought. Because he is aware of the way in which the ritual of the cave finds expression he is less disposed than some of his contemporaries to meditate on its idols or to engage in a wholesale breaking of what Cowley in his ode "To the Royal Society" stigmatizes as "old and empty Pitchers." He is much more fundamentally concerned as all his work shows with metamorphosis.

When the father of Peter, Martin, and Jack in *A Tale of a Tub* leaves the lads three coats as a legacy he tells them that the coats have two virtues: first, with good wearing the coats will last fresh and new as long as the boys live; secondly, they will grow in the same proportions as their bodies, lengthening and widening of themselves. The parable of the coats and their retailoring is amplified by the digressions into a commentary, made comprehensible by the current analogy between the Book of Nature and Holy Scripture, on those projectors who felt it necessary to "devest themselves of many vain conceptions, and overcome a thousand false images" which lay like monsters in their way.

There is no doubt that some of Swift's repeated references to clothes are a response to the Royal Society's emphasis on primitive purity and the naked truth. "They have exacted from their members," Spratt wrote of the Royal Society, "a close naked natural way of speaking; positive expressions, clear senses; a native easiness: bringing all things as near the Mathematical plainess as they can." As Swift suggests the "converting Imagination" which disposes some "to reduce all things into *Types*" can easily refine "what is literal into Figure and Mystery." Universal stripping and patching do not answer man's needs as the plight of Jack shows; for "it is the Nature of Rags to bear a kind of mock Resemblance to Finery; there being a sort of fluttering Appearance in both, which is not to be distinguished at a Distance, in the Dark, or by short-sighted Eyes. . . . So in these junctures, it fared with Jack and his Tatters, that they offered to the first view a ridiculous Flanting which assisting the Resemblance in Person and Air, thwarted all his Projects of Separation."

If what is "vulgarly called Suits of Cloathes" can deceive the world, or if "certain Ermins and Furs" or "Conjunction of Lawn and black Sattin" can operate as an extension of power, a tool, or a weapon, so, Swift observes, can a beggar's rags. At the end of a pamphlet *A Proposal for Giving Badges to the Beggars in All the Parishes of Dublin* Swift, with less emotional concern about clothes and the visual status they confer, and with a clearer understanding of the operation of power in all its manifestations than Carlyle, observes candidly that beggars in general "do not much regard Cloathes, unless to sell them; for their Rags are Part of their Tools with which they work."

In the first of the Drapier's letters Swift speaks of clothing as a necessity threatened by the ruinous extension of private power over a whole nation under the mask of the king's stamped face.

> What I intend now to say to you, is, next to your Duty to God, and the Care of your Salvation, of the greatest Concern to your selves, and your Children; your *Bread* and *Cloathing*, and every common Necessary of Life entirely depend upon it.

From the concept of clothes as necessary protection Swift moves quickly to the image of clothing as offensive weaponry:

And I may say . . . that [Wood] resembles *Goliah* in many Circumstances very applicable to the present Purpose: For *Goliah* had *a Helmet of* BRASS *upon his Head, and he was armed with a Coat of Mail, and the Weight of the Coat was five Thousand Shekles of* BRASS, *and he had Greaves of* BRASS *upon his Legs, and a Target of* BRASS *between his Shoulders.* In Short, he was like Mr. Wood all over BRASS; and he defied the Armies of the living God.

Later in *An Humble Address to Parliament* the Drapier observes that the clothing of one thing may mean the destruction of another. He deplores the cutting of turf without any regularity so that the cattle are destroyed and land made marshy, stagnant, and repulsive to the sight by the "flaying off the green Surface of the Ground" to cover cabins. Because of the custom of cutting scraws in this way "many Skirts of Boggs, which have a green Coat of Grass" are carelessly mangled. So too, Swift says elsewhere, the critics flay living works so that they can embellish their own thought with flowers of rhetoric.

The references to clothing in *Gulliver's Travels* are as numerous and important as they are not only in *The Drapier's Letters* but also in *A Tale of a Tub* and *The Battle of the Books* in both of which Swift is concerned with the book as garment and extension of thought. In *Gulliver's Travels*, however, Swift concentrates his attention on the ritual function of clothing as it separates, transforms, or incorporates.

In Lilliput, Gulliver, whose own leather jerkin might have protected him for the nine months and thirteen days of his residence there, is invested in a suit quilted together from the Lilliputians' short and narrow pieces in such a way that it looks like the patchwork made by ladies in England, only all of one colour. The transformation of essence, however, which begins when Gulliver is chained like a dog to the polluted temple in Lilliput, is confirmed in Brobdingnag by the donning of mouseskin breeches as well as by enclosure in a portable cage. In Laputa the tailors make Gulliver a mathematical suit which effects no change before his pathos because it fails to conform in any way to the contours of his body. His final predicament we have already examined.

Although much has been said about Swift's references to excrement this motif has not been associated with his repeated references to the pelts and hides of things. The general connection between the two motifs is suggested by Plutarch's comment on the linen clothing of the priests of Isis, who refrained from wearing wool, shaved their heads, and ritually pared their nails from fear of pollution by excrementious substances. Carlyle's choice of the name Teuflesdröckh or Devil's dung as the original name Teuflesdreck makes explicit signals a romantic turning on the same theme.

Carlyle is, in fact, less interested in the protective function of clothing or significant formal extension than he is in the pathology of "shrivelled" pelts or

"fast-rotting" raw-hide. It is not surprising that at the outset of *Sartor Resartus* he should recall the name of the French physician Bichat whose *Treatise on Membranes* (1799–1800) brought histology to the service of pathology. Much of *Sartor Resartus* is a necropsy of a society which manifests itself visually to Carlyle as a mass of diseased tissue. Everywhere his eye is confronted by "hateful empty Masks, full of beetles and spiders," clerical aprons, exhibitionist clothes-screens, and the intolerable garments of established authority. Vested interests "are all hooked and buttoned together, and held up by clothes."

Teufelsdröckh in contrast presents himself in "loose ill-brushed threadbare habiliments." In his black moments he sees the "Clothes flying off the whole dramatic corps; and Dukes, Grandees, Bishops, Anointed Presence itself . . . straddling there." He tries to convince himself that the clothes he sees and has been taught to reverence are now either exuviae, "Cast Clothes," or mere pods and husks which mask some shrivelled or diseased truth. Excluded from the great world of clothes, isolated, and oppressed with guilt, however, he feels that these symbols are really reservoirs of power which must be released, and will be released inevitably by the operation of time, for some total transformation over which he himself will preside. He feels that the world is his oyster, but the shell remains obstinately shut. In the invested world "to be weak [*unkräftig*] is true misery." From the point of view of the dispossessed clothes appear to him as "the manifold cunning victory over want." Clothing for him is never iconic. Clothes like books are tools or weapons. There is hope even for the rags thrown into the Laystall which, after being "macerated, hot-pressed, printed on" can circulate in "larger or smaller circles" through the Chaos of life.

Conditioned as he is by the analogy between the printed Bible and the Book of Nature, Carlyle, under the impact of the popular press, and the printing of "news" which (to negate Ezra Pound's phrase) does not "stay news," senses almost imperceptibly that for the time being the only possible role for the artist is to become editor or tailor's patcher. In accordance with his sense of social justice, however, he is forced to postulate a period of waiting not unlike that to which Sorel, after him, was to give the name of General Strike.

The desire to burn, to shatter, to destroy comes from a confusion of the iconic with the mechanical permanence or death suggested by the forms of print. Unlike Swift, Carlyle has no sense that the garment, like skin, will lengthen and widen itself. In his actual understanding he has advanced no further than the Lilliputians. There must be, he is convinced, a divesting, a burning of almost all the innumerable "stript-off Garments," a provisional quilting together of the sounder rags into a huge watch-coat for the period of waiting during which the new organic filaments spin themselves "even as the ashes of the Old are blown about."

Attention at this moment fixes on the new electric media. The image of the "electric Battery" becomes central. In terms of movement, change is seen as the passage through "the centre of indifference" from the negative to the positive pole. Although Carlyle dwells on the crisis during which Teuflesdröchk rejects the devil and the whole Satanic School among the civic rubbish in the *Rue Saint-Thomas de l'enfer* and although he rejects "Witchcraft and all manner of Spectre-work" as madness and disease of the nerves, yet he admits that the "soul" must descend into "a world of internal Madness," into "an authentic Demon-Empire" in order to create. The region of poetic creation and palingenesis "where the Phoenix Death-Birth of Human Society and all Human things seem possible" in a "Nether Chaotic Deep" is an electric field.

It is a labyrinth of power. And there, like T. S. Eliot's Sweeny, we find Carlyle's heroic self in the person of Teuflesdröckh, one of "the inspired (speaking and acting) Texts of the DIVINE BOOK OF REVELATION," guarding the Horn-gate. In casting what is virtually an expressionist drama depending for its action on a doctrine of *Thatkraft* or active power translated into a theory of work, Carlyle almost automatically chooses for his pragmatic as opposed to his heroic spiritual self the role of regulator or editor. As a compound figure he belongs by anticipation to the family of Valéry's Faust.

As editor he contents himself during the period of disintegration with patching together and shaping into a whole the fragmented biography of the hero. Teuflesdröckh's foot meanwhile is on the treadle in the *néant*, the place of symbolic genesis. He is at work in the flux of undifferentiated power loosed by the breaking of previous moulds and fed by the forces of Chaos and Ancient Night. It is somewhere in this nowhere and sometime in this no-when, in the region of things-in-general of which Teuflesdröckh has been appointed professor, that the spinning begins again.

It is to be noted that Teuflesdröckh's genesis is his exodus from the basket of the stranger. In the idyllic garden of his foster father he is seen already spelling out the alphabet of the Book of Nature and rejoicing in the possession of his first tools. Reading print seems to him the natural function of sight. The things of the world shrink to the thinness of paper. Only naked power has any reality. It is out of this impoverishment that Carlyle's own iconoclastic fury is born. All his models—cosmological and social—are technomorphic. Although the emergence of the new electric technology revives, with what appears to be demonic importunity the older iconic forms, Carlyle can confront these merely on his own terms. Indeed he seems less a prophet, as he is often called, than a symptom of the disorder to which Swift called attention in *A Tale of a Tub*.

THE VISUAL UNSEEN

HARLEY W. PARKER

"The effect is the thing that counts, not the sensuous facts"—
Heinrich Wolfflin, *Principles of Art History*

Notes toward a grammar of presentation for museums

The area of testing audience reaction to design solutions in the museum is a relatively untouched field. This is not to suggest that the design solutions in other areas of our life are in much better shape. We simply do not have a grammar of presentation. When a museum hires a designer, it is usually on the assumption that he will add certain elements of good taste to the presentation, even though there is no proof that such an addition is useful in terms of communication. The contemporary awareness of the ways in which techniques of communication structure audience responses could well be enhanced by the accumulation of scientifically verified data. This would undoubtedly result in an appreciation of museum presentation as a unique art form. As Herbert Bayer says in the preface to *Exhibitions and Displays* by Erberto Carboni: "If we review the plastic arts as mediums of communication we find them, in a traditional sense, limited to certain accepted rules. Experimental thinking has in some instances broken through these barriers but even architecture, often looked upon as the synthesis of all plastic arts, is confined to a more or less rigid framework of principles. In the design of exhibitions, there has evolved during the last thirty years, often springing from architecture, more often though from painting and the graphic arts, a new discipline. The universal application of all available plastic means, more than anything else, makes exhibition design into an intensified and new modern language."

In these notes I intend to discuss various concepts pertinent to the organization of a grammar of presentation. That this cannot be a definitive discussion will become apparent as we begin to survey the multiple implications of the field. My attempt therefore is to find an approach rather than a solution.

Good design is good communication. This statement stresses rejection of the idea that art is a decorative element imposed on the already functioning unit. The very concept of the decorative as it existed up to the end of the nineteenth century is a misapprehension based on the visual, literary bias—the lineal story-telling concept of the Renaissance. It was at this time that the dualism between Fine and Applied Art was born. The considerably less fragmented Middle Ages had little tendency to create differences where none existed, at least in the sister arts of book illustration and decoration, for as David Bland points out in

a *History of Book Illustration*: "In the medieval mind, however, it may be doubted whether there was any distinction between the two." However, as the Middle Ages died, the inevitable differences exposed under the specialist bias of the Renaissance was, of course, interpreted solely in Renaissance terms. The decorative, the two-dimensional, was relegated to a role of relative non-communication solely because its data about the world did not correspond to visual reality. That this dichotomy between the world as it is known synesthetically and as it is understood visually, did exist, is proven by the fact that we still stress this split in our traditionally organized art schools where painting and design are carried on with little or no liaison between them. The contemporary art schools, in too many instances, still do not understand that the trend of the twentieth century is away from the eye in isolation and toward a unification of sensibilities with a concomitant stress upon the communicative abilities of the formal or structural factors of art.

It is important to note that we must always examine any *a priori* concepts which we bring to design problems so as to recognize when they are merely our cultural *appliqués*—habitual responses to badly understood problems. That so many people today regard the designer as the man who ties the ribbons on the already packaged gift is due to the fragmentation of a unified artistic understanding, generated by print technology, and the application of this fragmented point of view in so many of our industries where the "stylists" decorate the designs of the engineers. An architect recently told me that there is a very strong feeling abroad in his profession that there is a necessity for a much closer liaison between architects and engineers. In fact, he went so far as to say that we should stop producing architects and engineers and start to produce "Master Builders"—a remark startlingly evocative of the Middle Ages.

In design for scientific purposes the above dichotomy does not exist. Can it be that the reason for the successful use of designers is that some of the techniques of science rub off on them? The designer in such a situation is forced to add to his artistic and intuitive grasp that understanding which is based on proven empirical data. While the essence of science is the repeatable experiment, in most areas of design there is insufficient data available for the designer to predict success or failure. It would seem that the sooner we arrive at measurable data for design and planning, the sooner we will be able to use designers intelligently for the creation of environments which are conducive to the proper development of man. I hasten to forestall the objection that design cannot be wholly dependent upon measurable data by pointing out that no artist has ever been limited by a knowledge of the efficacy of his approach or his tools. Furthermore, the designer will never be in a position of having sufficient data. His every insight will merely open up new horizons, the understanding of

which will demand more data. There will always be the need for the intuitive grasp.

I believe that one of the primary errors made in the course of the formulation of exhibition design is to consider that communication via the printed word takes precedence over that engendered by the design of the presentation. Or, to put it another way, the design elements are merely expected to fortify the verbal exposition. Today, both written exposition, with its essentially linear structure, and contemporary design, which is essentially nuclear in structure, must work together. It can be expected that each will modify the other. For example, in a design format where the all-at-onceness of tribal organization was stressed one would expect to see this idea recognized, not only in terms of label content, but in the very syntax of the copy. It is only by such a tight intermeshing of disciplines that we can hope to communicate successfully.

In the museum world the failure to arrive at a working relationship between the designer and the scholar often results in the latter taking over the designer's role. The scholar feels that he must control the design in order to prevent it modifying what he wishes to say. All too often he backs himself into the corner of mediocrity and, at the best, good taste. With the scholar's training in lineal exposition he tends to impose this mode upon the organization. He does this even though it is quite evident to anyone who appreciates contemporary art that non-verbal modes of exposition today depend on immediate all-inclusive involvement of the senses of the audience rather than on the lineal repetitive mode which tends to put the audience in a very passive role.

Marshall McLuhan has said: "The content of any medium is another medium". Speech, for example, is the content of writing. The content of museum presentation is a series of other cultures or a variety of scientific disciplines, but it contains many other media as content: writing, telephone, radio, movies, pictures, the sculptural media via the tactility of surfaces, etc. With multi-media as content of museum presentation, it becomes obvious that the *rationale* of any one of them is not only inadequate but so limiting as to be crippling. Any single medium as well as presenting us with information about our world is also a channel for our perceptions. Under the impact of any particular medium we find ourselves structuring our world within the confines of the sensory limitations of the medium. Any medium imposes its own assumptions, and so it is understandable that educated people, with their literary bias, in our society fail to comprehend that the sequential method of exposition is not the only possible or desirable one. The complete grip of the rationale of visual organization is understandable in the Renaissance, but today, because of the constant shift in methods of exposition, we find ourselves in a position to understand the assumptions of media and cultures which do not constitute our own environ-

ment. By moving into another method of exposition we find ourselves with a vantage point which allows us to overlook the assumptions of other media. We must understand that speech as the content of radio, for example, is not the same as speech as the content of writing. This in turn must prepare us for the idea that the written word as part of the contents of museum presentation is not the same as writing as content of book. I would hesitate to define exactly what form writing in museum presentation should take. I feel that it would take many forms depending upon the particular type of presentation. I realize that the type of organization of the written material should take its cue from the design, which in turn takes its cue from the assumptions of the medium, the quality of the audience, and the particular theme.

Museum presentation has been with us, essentially in its present form since the Pinacotheca (a marble hall of the propylaeum on the Athens Acropolis) although the first really modern museum was the British Museum established in 1753. Since the middle of the nineteenth century, however, we have had introduced into our society various methods of communication each of which imposes its own assumptions and therefore creates its own method of organizing data. That we are now able to see past these assumptions to some extent and come to grips with the diverse re-structuring possibilities of media is due to our ability to shift from one medium to another. As well, we must consider the effect of the interpenetration of cultures. For interpenetration also discloses the different assumptions of media. It is amazing, for example, how much insight that we obtained when we first presented movies to illiterate natives. We discovered, for example, that natives, because of a culturally built inability to focus slightly in front of the screen have to scan each picture. As the change of image is so rapid they have barely begun to examine one picture before it has radically changed. We discovered that the ability to see and understand movies is a learned process. The point I am trying to make is that we cannot afford to impose the assumptions of any medium onto a method of communication, for museum presentation, which is essentially of a unique kind.

Museum presentation constitutes a medium just as unique as any other, and is one that demands a knowledge of the assumptions of many other media. That we still search for the answers as I am doing in these notes is a commentary on our desperate need for help from many disciplines, and concomitantly, the need for individuals trained in the orchestration of many modes of sensory communication.

Knowledge of the impact of design solutions upon the audience would provide the designer with an opportunity to fly freer and further—to confront his audience with ever-more satisfactory and imaginative solutions. There is an increasing need in our society to provide designers with an opportunity to test

designs in their full social effects. It is interesting to note that painting in the twentieth century, because of its low cost, has done a great deal of psychic and social experimenting and probing even when there was no foreseeable use for the results. The alacrity with which many of these design experiments have been incorporated into the vocabulary of "the hucksters" however is sufficient comment on their efficacy. The ephemeral qualities of advertising makes it unnecessary for that industry to find long term design solutions. Advertising in its need to discover and to sell "dreams that money can buy" is in a very different situation from the museums. As A. E. Parr has noted in *Curator*: "When we design in order to teach, our goal is not to achieve a hypnotic suspension of judgment, but, on the contrary, to alert the critical faculties and to awaken the independent inquisitiveness of our public. All the work that has been done on how to persuade without having to convince is without application to the educational process, except as a warning of dangers to avoid". Yet I feel that it is absolutely necessary that museums avail themselves of some of the new techniques even if museums are trying to sell a concept of society which does not coincide with the advertising world's mirage.

In education it is always a moot point to what extent one can sweeten material in order to make it acceptable, but I would suggest that the intelligent use of techniques of advertising, trade fairs, expositions, etc., is not so much a sweetening as it is an attempt to present a product in a manner which will extend the awareness of a contemporary audience. Whether we like it or not, we have to accept the fact that the mind of the audience is constantly being re-structured by the environment of advertising, and if we want to contact that audience we must broadcast on the same wave length. At this point I almost expect to hear my readers say: "That may be true of most people but it isn't true of me". To this my answer can only be that such a response indicates a lack of understanding of the structuring capacity of the media. In a society that communicates primarily by the book, all men are literate whether or not they can read or write. They are literate in the sense that they are moulded by a world which reflects exactly and specifically that type of organization which print generates. The same thing is true where the world and our minds are constantly being re-made by advertising and the ubiquitous TV "eye". In fact, the man who says "Advertising doesn't affect me" is a beautiful example of the person who has been attacked subliminally.

Consciousness is the result of interaction between man and his environment, each modifying the other. As long as the environment with which man interacts is cacophonous, ugly and unintelligible, so long will the development of the human being be retarded. The fact that the most intelligent designing, the most cogent planning, is devoted to hurling man off the face of this planet is a covert

comment on our disordered existence. Until we accept art (or design) as a communication process which is concerned with making life, all life from the mundane to the spiritual, understandable and concomitantly more fruitful, then we face life with a dichotomy between living and creating. Commenting on the dichotomy between art and life, Raymond Williams in *The Long Revolution* says: "When this (the traditional definition of art) was extended to a contrast between art and ordinary experience the consequences were very damaging. In modern industrial societies, particularly, it came to be felt that art would be lost unless it was given this special status, but the height of the claim ran parallel with a wide-spread practical rejection and exclusion. So powerful has been the tendency to exclude art from serious practical concerns, that, in a natural mood of defence, the claim that art is special and extraordinary has been urgent and even desperate; even to question this produces reactions of extreme violence, from those who are convinced that they are the sole defenders of art in a hostile world. The suggestion that art and culture are ordinary provokes quite hysterical denials, although, with every claim that they are essentially extra-ordinary, the exclusion and hostility that are complained of are in practice reinforced". Here we encounter the paradox that those who are most concerned with the survival of art are doing it a disservice by defending its special nature. This is, of course, understandable when one recognizes that it is usually the educated who rise to the defence of the arts, and the educated in our society unfortunately are too often the believers in fragmented specialism.

It is interesting in the light of the quotation from *The Long Revolution* to take a look at *Painting and Reality* by Etienne Gilson where he says: "It is often said than since the museum is a civic institution, its existence is justified to the extent that it serves the needs of the people. And nothing can be truer; but this is precisely the reason that, in the case of painting, the more they are concerned with education, the less museums are concerned with art". Gilson in his excellent book is "taking a swipe" at the growing aggressiveness of the disciplines of language, and therefore at the educational system which does not understand the function of painting. Nevertheless, with all his sensitive appreciation of the dichotomy which currently exists between the appreciation of art and the assimilation of data, I believe that it is necessary to go beyond that appreciation and try to discover those factors which will tend to end the polarity.

Design must be recognized, not as a peripheral benefit derived from the society but rather as an integral part of the social process. Any analysis of design separate from the social organism deprives the organism of one of its constituent parts that is most vital to its unity. Analysis of the effect of design in the society becomes impossible. Objective information on the function of design *in* the society rather than the relationship *to* the society is our interest.

That form follows function is to me axiomatic, but function must be understood as much more than just a properly working unit. It must be considered whether the job the instrument is doing is worthwhile in terms of a broader appreciation—in terms of the whole community of operating units of which it is a part. Its value must be appraised in psychological as well as physiological or physiological-mechanical terms. A house is not necessarily well designed because people live in it in a manner that conforms to the pattern of the community. The community itself could undoubtedly bear analysis. It is true that it is seldom that any one gets an opportunity to design a community, but even one good design injected into a complex of ill-conceived units can have its regenerative pervasive effect, providing its impact on the over-all pattern has been properly considered. For, a community, in terms of its function, is not like a chain in which it would be useless to strengthen an individual link; rather it is like a biological organism in which any strong part adds vitality to the whole.

Too few people who work in museums regard museum presentation as a medium, but it is just as unique in its way as the book or the movie. If we accept it as a medium, however, we also have to accept the fact that it will govern *what* can be said because it governs *how* it can be said. This impact of forms upon content we have all encountered in our everyday speech as we search for a method of expressing some experience. Quite often we discover that our expression has enriched our original idea. The form has so vitalized the facts that we sometimes wonder whether we could have said it. In other words, it turns out to be richer, more provocative, more perceptive than the mere content as we originally thought of it. This might be the result of the rhythms of speech, alliteration or any one of a dozen different factors of the art of talking. At the risk of belabouring a point which may be obvious, it must be pointed out that the audience does not separate content from form (an impossibility at any rate); it accepts the presentation as an indivisible whole. Further, because it does not make this separation, it accepts any given statement as true within the total dynamic situation. Isolated facts only have validity within a framework of a known cultural situation.

The awareness that form modifies content should have created a growing concern for a definitive syntax of presentation. In too many instances in the museum world, however, it has resulted in an attempt to return to the older method of exposition, the book. The fact that so many exhibitions are organized around the labels is an indictment of our inability to cope with the real problem of the museum which is the intelligent display of artifacts and specimens.

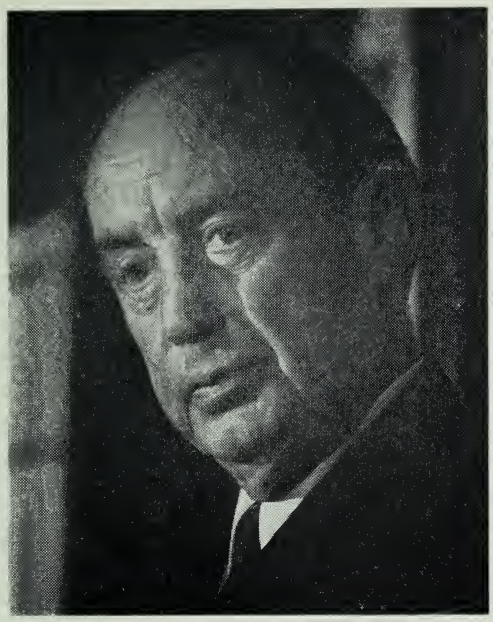
Museum presentation can, and quite often does, use sight, sound and touch all coupled to kinesthetic as well as visual and acoustic space. Although a single,

unique medium characterized by the fact that it uses three-dimensional objects, it quite often uses other media such as slides, movies, tape recorders, the printed word and so on. Each of these media must be examined separately in terms of its contribution to the over-all unity. Movies, for example, cannot merely be added because they give additional information. It must be remembered that the movie and electronic media are anachronisms in the presentation of any material originating prior to the twentieth century. We add complexity to complexity when we place in the museum, which is already a clash of multiple cultures, media which were born of twentieth century technology. This is not to suggest that they should not be used but rather that they must be used with an awareness of their effect upon the sense responses of the audience.

If we hark back to the quotation with which I started: "The effect is the thing that counts, not the sensuous facts", then we find our thoughts directed towards the idea of audience testing. For without audience testing we cannot know these "effects".

In order to arrive at any complete program for testing audience reaction in museums it is necessary that we bring together teams of widely divergent disciplines. It would certainly, for example, require psychologists, social workers, designers, architects, medical doctors, psychiatrists, specialists in linguistics, as well as the many specialists on various cultures and sciences who already work in museums.

In our world of total involvement via the globe-embracing extensions of communications, the role of the passive observer is becoming increasingly less pertinent. Fragmented expertise which is the function of the uninvolved observer probably reached its end with the realization of the physicists that the very act of observation produced changes in the observed. Everywhere there is feed-back. In other words, specialization can only exist coincidentally with the belief that communication is a one-way process. The realization that this is not true inevitably results in an increasing awareness of consciousness as response to field rather than to line. By insistence on lineal development of thought in presentation techniques we can depress the level of involvement and therefore the ability of the data to assume its own structure. It is interesting to note here that the ability of any medium to impose its own assumptions finds its exact equivalent in primitive art where each object creates its own space instead of merely occupying a pre-structured space as in the Renaissance concept of pictured three-dimensions. It is not necessary, however, to study primitive modes of organization to find parallels to our current awareness of the media's ability to create its own structures. It is, of course, inherent in the field implications of today's electronic extensions. The contemporary artist's concern with pre-literate modes is a logical response for a man who also lives in a world of simultaneity.



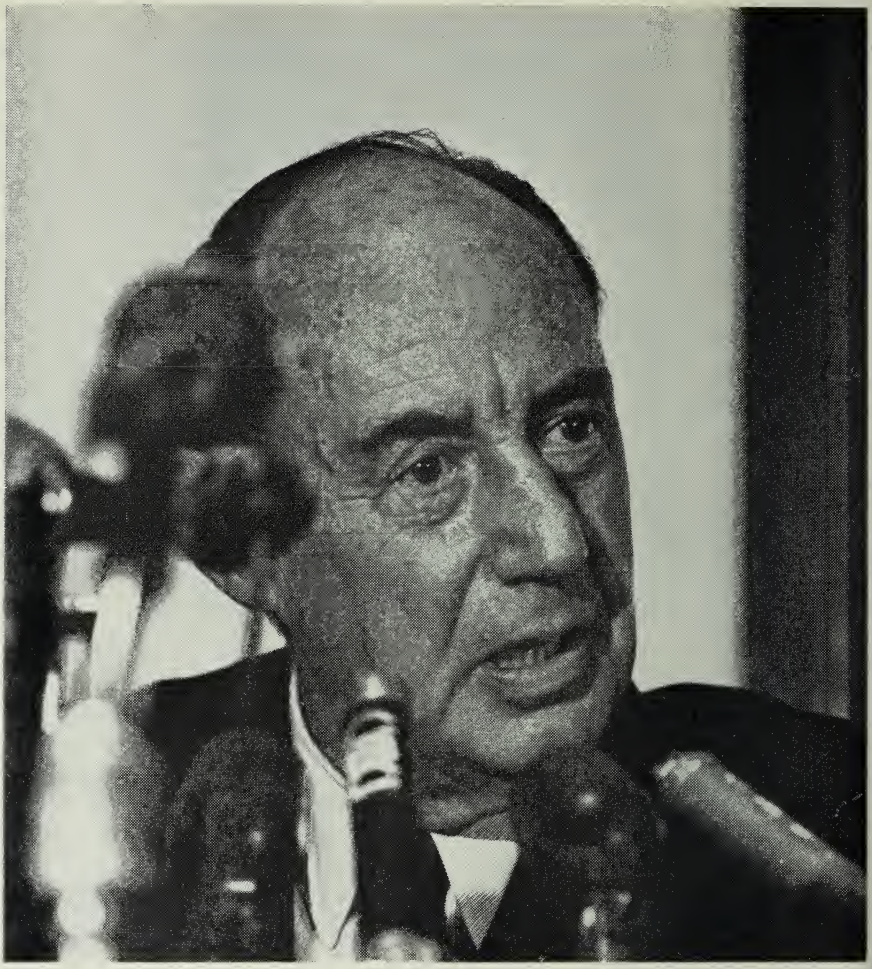
A Spokesman for His Age

THE DAY that Adlai Stevenson visited the University of Toronto – May 28 – was a memorable one, made poignant by his sudden death less than seven weeks later.

While he was here, the Permanent Representative of the United States to the United Nations dined with graduates of University College and received an honorary degree from the University. To these long-planned events he agreed to add a third: a press conference which attracted international interest and attention.

The University of Toronto community, staff, alumni and students alike, welcomed Dr. Stevenson as a man who had given freely of his talents to the world–as journalist, lawyer, administrator, diplomat, Governor of Illinois, twice candidate for the U.S. Presidency, and Ambassador to the U.N. Above all, he was accepted as an authentic voice for true peace, "a spokesman for his age".

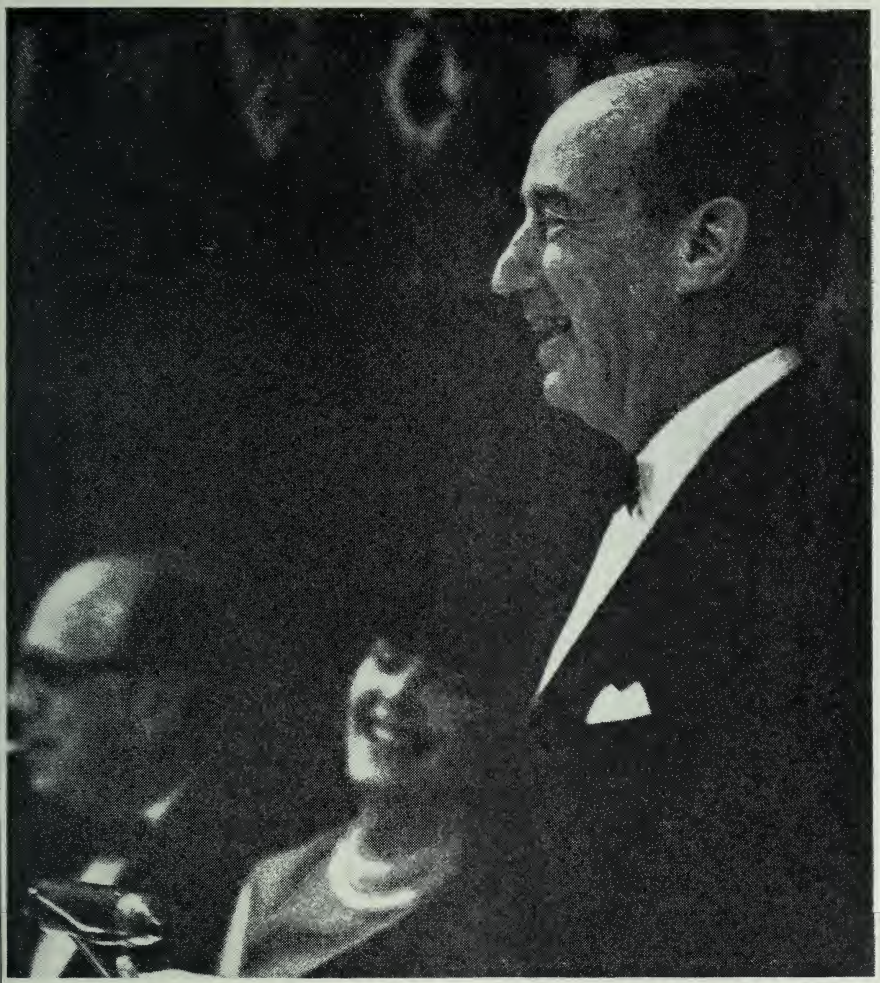
A few objected to the fact that he was so honoured, because of their objection to aspects of his country's foreign policy. But their protests were moderate and silent, and did not detract from the high purpose of his mission.



THROUGH a thicket of microphones, Adlai Stevenson made his first public appearance on the University campus at an afternoon press conference in Hart House.

To his left was Charles Yost, Deputy Permanent Representative of the U.S. to the United Nations. He was introduced by President Claude Bissell, who then sat at the end of a press table (*facing page, upper left).*

More than a score of Canadian and American newspapers, news services, magazines, radio and television stations covered the event. Dr. Stevenson responded to the most searching interrogation with skill and wit.



IN STATELY Great Hall of Hart House, Adlai Stevenson was the guest of honour at a dinner of University College Alumni and Alumnae.

It was Dr. Stevenson's second visit to Hart House that day. On this occasion he had an opportunity to enjoy his hosts' gracious hospitality, to meet many of the University's graduates, and to speak to them more informally than at Convocation.

As the picture above testifies, Dr. Stevenson enjoyed the lighter role in which he appeared. So did his auditors, among them Principal Douglas LePan of University College and Mrs. Claude Bissell *(above, left to right).*

A man of ideas, of action, of letters

CONVOCATION Hall was filled to the uppermost balcony, and many stood, for the ceremony at which Adlai Stevenson received the degree of Doctor of Laws *honoris causa*.

President Claude Bissell (above) presented the honorary graduand to the Chancellor. The citation follows:

In a recent speech Adlai Stevenson referred to the "precise and precious balance between vision and practicability" that characterized the thought and work of the founding fathers of the American Republic. Such a balance, no less "precise and precious" has marked the course of Adlai Stevenson. In all his public utterances the vision is present, explicit or implicit, even in the guerilla warfare of the political campaign or in the cut and thrust of Security Council debates.

Few men in our time have evoked a vision more eloquently and more compellingly. His is a vision of a world community founded on the tolerance of national differences and of a national society founded on the

freedom of the human spirit. It is a revolutionary vision in which the warfare is against poverty and ignorance and on behalf of the rising expectations of man. He believes devoutly that the United States can be a principal agent in such a revolution. Yet, stout patriot that he is, he recognizes and describes the national weaknesses. He has spoken out against "the apoplectic quality of our anti-communism"; "our tendency to see the whole world in our own image and likeness"; and he has warned that "our first job is to school ourselves in cold-eyed humility; to recognize that our wisdom is imperfect and that our capabilities are limited".

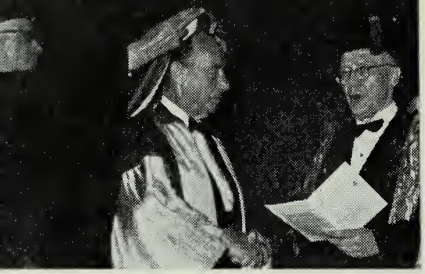
The vision of the ideal never fades, but it never becomes an excuse for inaction. "For", he writes, "the nation's purpose always exceeds its means, and it is finding a balance between means and ends that is the heart of foreign policy and that makes it such a speculative, uncertain business".

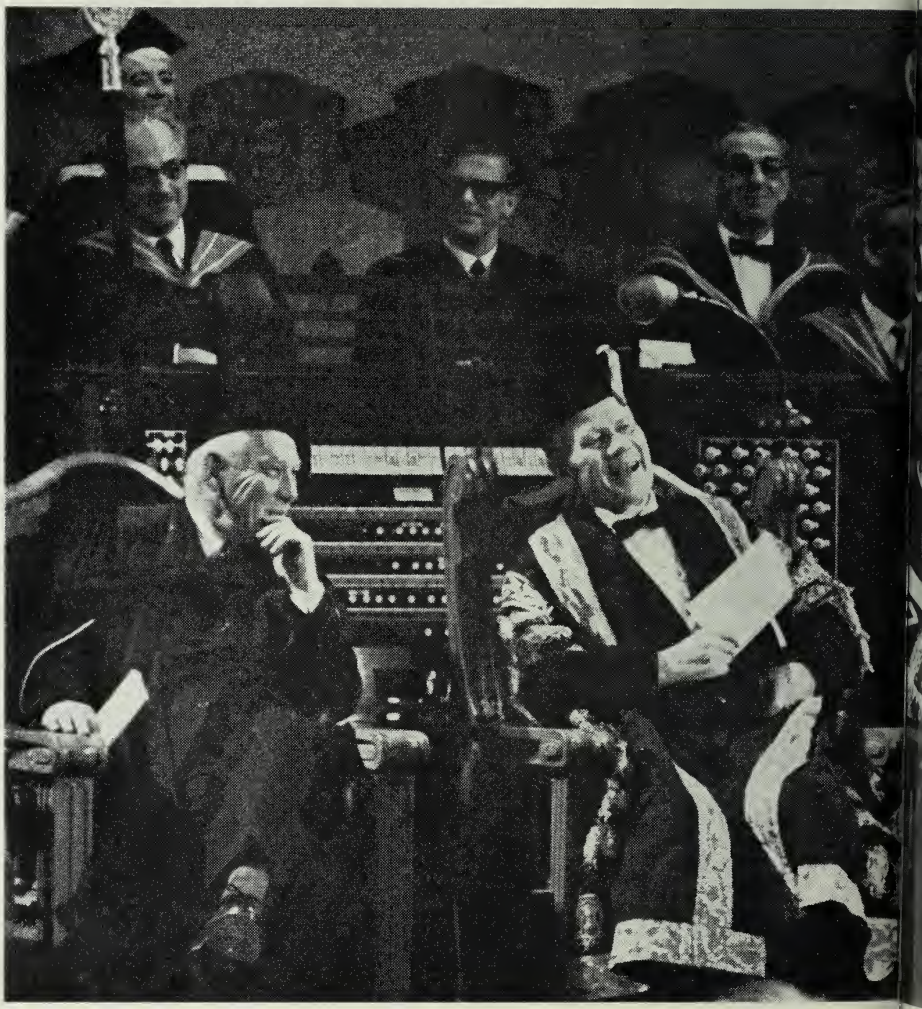
Adlai Stevenson is a man of ideas. He is also a man of action. Recall his work in the forties as a member of the State Department in launching the United Nations. Recall the reforming zeal linked with superb efficiency of his Illinois administration from 1949–1953. Recall his service to progressive thought during the Presidential election campaigns of 1952 and 1956 when, on many issues —one thinks in particular of civil rights—he articulated the conscience of his nation. Recall his precise, lucid, and compelling statements during the Cuban crisis when the world looked into the abyss and then turned away.

Adlai Stevenson has been honoured by many universities, and this is as it should be. For he is a great teacher whose classroom is an entire generation. As an unapologetic intellectual he has rallied the intellectuals of our day to a new social awareness. He would, I suspect, have some difficulty in identifying himself with the modern avant garde of political radicalism, but he would have no difficulty in understanding it. "For", as he has said, "the restless, unsatisfied mind is always open to everything except fear and prejudice".

We honour Adlai Stevenson, not only as a man of ideas and of action, but as a man of letters. He is the best exemplar in our day of the humanist in the world of affairs, his delight in humane letters having survived the gritty discipline of the law. He knows how to order words so that they glow with life, and he knows the secret of the masters, that the humorous and the serious reinforce and illuminate each other. Some words he has quoted from Robert Frost about the making of poetry might fittingly be used to describe his own forensic art: "It begins in delight and ends in wisdom".

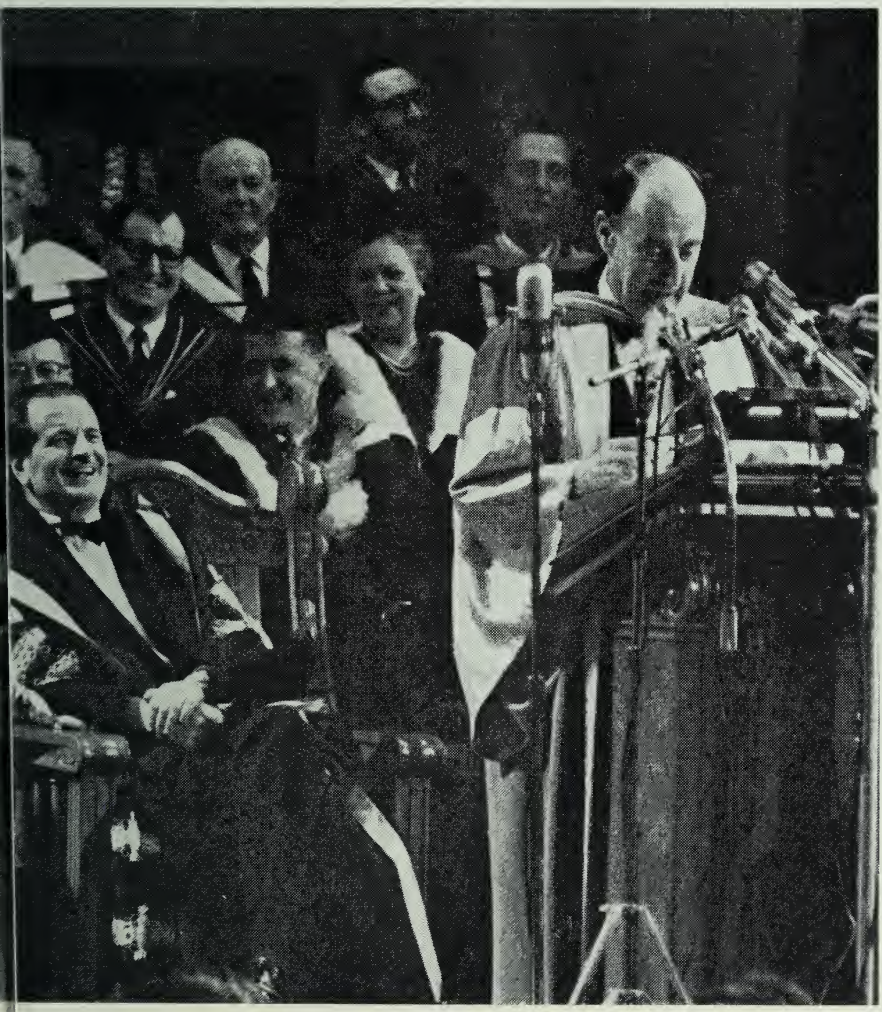
Mr. Chancellor: In the name of the Senate I take much pleasure in asking you to confer the degree of Doctor of Laws, *honoris causa,* on Adlai Ewing Stevenson, a man of wit, charm, and modesty, tribune to his country, and a spokesman for his age.





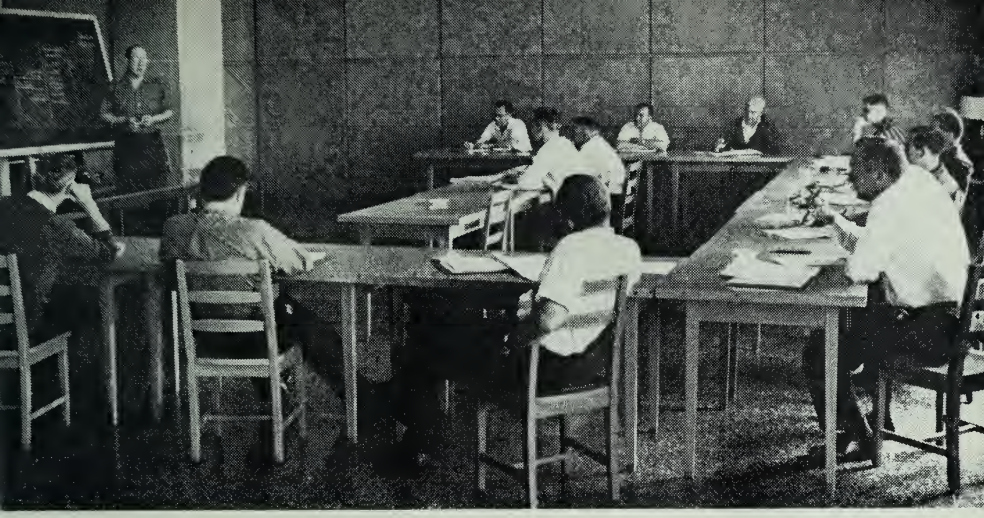
After receiving his degree from Chancellor F. C. A. Jeanneret (facing page, upper left), Dr. Stevenson spoke on "the search for peace that concerns us above all else."

It was statesmanlike and appropriate, but, in the Stevenson tradition, lightened with extemporaneous wit that delighted the audience. One such interjection—"Let Saigons be Saigons"—thoroughly amused everyone, as the photograph below will attest. In the front row (*left to right*), are Dr. Henry Borden, Chairman of the Board of Governors; the Chancellor, and President Bissell.



After addressing Convocation, Mr. Stevenson is congratulated by the Hon. Paul Martin, *above*, the Hon. Donald M. Fleming, *below*, and by Dr. Henry Borden, Chairman of the Board of Governors, *facing page*.

In the rich setting of the Great Hall of Hart House, Adlai Stevenson stood in serious silence. This, then, was the man who, as was said of him at Williams College a few days later, had "given voice to the goals of the New World and to the aspirations of mankind."



All work and no play is the executives' way

FAR INTO the night the lights burned brightly for the shirt-sleeved students and their shirt-sleeved professors. They had no time for play; they had only a few days into which to compress a mass of study, and, in any event, to them the work was fun.

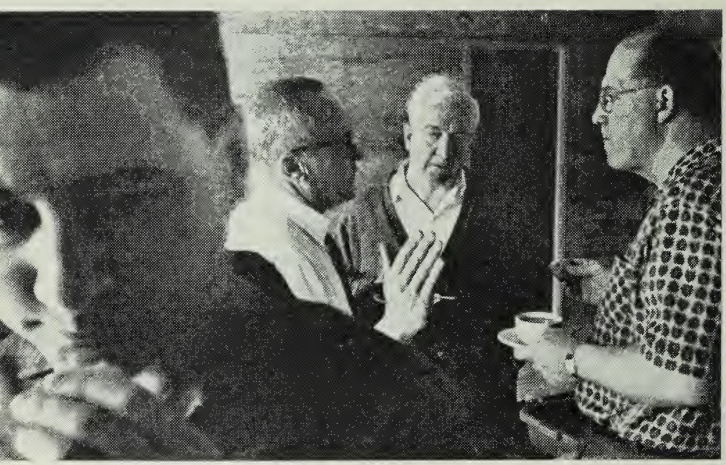
The students were business men and the professors were from the University's School of Business, devoting the balmy spring days to one of the two seminars for business executives held in the spring.

The 1965 Spring Seminar was a core course in Management, concerned with such topics as administration, labour relations, human relations, marketing, finance, production, and decision-making. A business "game" was played, in which the University's IBM 7094 computer was used.

The Executive Seminar, scenes from which are shown on this and the next three pages, studied the economic and social environment of business and the operative forces affecting business organizations.

Except for coffee breaks, meals, and strolls about the pleasant grounds of St. Michael's College, where both seminars were held, it was "all work and no play", which was the way the students preferred it.

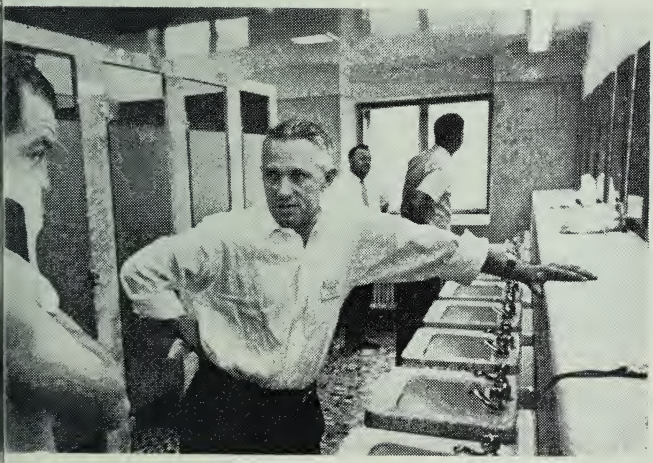
Dr. J. W. MacMillan, psychologist and visiting lecturer, is "kept in" after class by eager chairman of a company board attending Seminar.



The students "talk shop" at every opportunity — and this includes coffee break time when the lecturer finds himself still answering questions.

It's time for lunch, but it's also time for the students to review the subject they discussed at the morning seminar session.

Good talk goes on in the rooms of the springtime students in the evening and sometimes far into the night.



It's time for morning ablutions, and the executives get ready for another day of discussions, lectures and study of today's management problems.

As another day begins, two students enjoy the morning sun in their walk toward St. Michael's where the seminars are held.

From every managerial rank they came

Executive Seminar lecturers, from the business world and from the University's School of Business, such as Professor W. Barry Coutts (*above*), addressed a broad range of managerial ranks.

One group, typical of both the Spring and Executive Seminars in 1965, included the chairman of the board of one company, a corporation president, vice-presidents, an assistant vice-president, a general manager, managers, assistant managers, sales manager, chief accountant, a bank inspector, a methods supervisor, personnel and employee relations officers.

Most of the business men-students were in manufacturing, Professor Maurice Hecht of the School of Business reported. The banks were represented, and so were the railways, the air lines and the communication companies. They came from Toronto, and they came from afar, from Montreal, from Nova Scotia to the east and Nipigon to the north.

No matter what their work, they gained a new look at management.

MEETING PLACE

Journal of the Royal Ontario Museum

VOL. 1, NO. 5. CHRISTMAS 1965

HOW ANCIENT SECRETS YIELD TO MODERN SCIENCE

STAINED GLASS

TWO VANISHED BIRDS

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HOW ANCIENT SECRETS YIELD TO MODERN SCIENCE

Complex new instruments can disclose how antiquities were made or altered—and even detect forgeries 2400 years old

R. M. Organ, Curator of Conservation

Antiquities must sometimes be submitted to scientific examination. The reasons for this are numerous but may be divided into two classes: first, as one means of establishing the authenticity of an object, and, second, as a way of establishing its physical condition and chemical composition before devising measures for its conservation or restoration. This short article will consider only the first of these, and that briefly.

Ideally, any object worthy of a place in an archaeological study collection will have been obtained from a scientifically controlled excavation; as a result, its approximate date will be known from evidence associated with its discovery. Unfortunately this is not always true. The majority of objects in the ROM collections were obtained either before archaeological techniques had reached their present advanced state, or through dealers. Ordinarily an expert can identify an object whose origins are unknown by comparing points of style; sometimes, however, no sufficiently complete typology has been

developed, and other criteria must be applied. These criteria involve the techniques or the materials used in making the object. In determining them the scientist can be of great value, bringing to bear well known methods of examination or developing new ones to resolve a particular difficulty in attribution. He may use both observation and analysis.

The simplest method of observation is visual examination under the optical miscroscope. Three other important but well-known methods involve ultraviolet fluorescence, infrared reflectance and radiography. Modern improvements allow these methods to be extended to more difficult subjects but essentially they produce morphological information which to the expert is of great value in itself, but usually requires further study of a more analytical nature if its full import is to be realized. Let us consider some examples.

First, let us imagine that ultraviolet fluorescence has disclosed the presence of an area of skilful repair in an object. The value of the object may be less if the repair was made in recent times. We know that the repair was made, or obscured, by some organic material or it would not have fluoresced in ultraviolet light. If we now can remove a fragment of this organic material and determine its infrared absorption spectrum in an infrared spectrometer, we may be able to identify it as epoxy resin. In this event the repair clearly is modern.

Second, let us imagine that X-radiography has disclosed a hard-soldered joint in the hilt of a sword of uncertain provenance. This joint might represent a modern repair, or an original method of manufacture. Now a modern repair will contain one of the standard brazing alloys, whereas an ancient joint may contain copper or some copper alloy different from those used today. In order to determine which solder has been employed we need to analyse it. This may be difficult because the joint will be very thin and very little sample will be available. Perhaps we will not be allowed to take a sample—in this event the problem becomes even more difficult!

Some information about the solder may be obtainable by metallographic means. First we should have to polish to a mirror finish a very small area of the object containing the joint to be examined. Then we would examine it in a metallographic microscope under vertically incident illumination, after applying a small amount of an etching agent to the surface in order to develop the crystal structure of the metal. From only the structure of the solder and of the object itself, we may be able to decide whether the joint was in fact ancient.

By greatly elaborated modern physical apparatus, we may even obtain some information about the chemical composition of these metals with no more than the polished surface to work upon. We would use what is called an electron-probe micro-analyser, and with it we would obtain photographs,

in terms of any particular element we choose, of a small area of the mirror-polished surface. It could be used to show in this case the distribution of tin in a copper-tin solder and to draw curves showing how the composition of the metal changes across the joint. It can also record, for example, the distribution of mercury and arsenic used as sulphide pigments in Chinese lacquer. This instrument may prove of great value in studying ancient silver which has become embrittled and can no longer be annealed by the usual methods.

Analysis serves the museum in many other ways. Illegible Roman coins, for example, can sometimes be dated within 40 to 60 years from a knowledge of their composition. The probability that an object made of glass originated in ancient Egypt may be decided on the basis of the ratio of calcium to magnesium it is found to contain. It has even been stated that we can determine which of the New England mines provided the material for making a particular piece of pottery from that region if we can estimate the content of the trace elements rubidium and caesium. Clearly, the uses of analysis are manifold, and analytical facilities must be provided.

Next, let us consider the practical details. If we know in advance what elements are to be estimated, and if we can obtain a quite large sample, then simple wet chemical analysis may serve. Usually, however, we are not permitted to take a large sample, and sometimes we are not allowed any sample at all. Then, we have to turn from chemistry to physics in order to find a comparatively non-destructive method of analysis. One invaluable tool is optical emission spectrography. This method can yield a permanent record of all the elements, down to a content of about one-thousandth of one per cent, that are present in a sample weighing as little as five milligrams. However, even five milligrams of sample may not be available.

A method that uses no sample and is completely non-destructive makes use of X-ray fluorescence. In principle, a flat area of the antiquity is irradiated with X-radiation. The area then emits secondary X-rays of frequencies representative of the elements present. The relative intensities of these secondary frequencies are recorded on a paper chart and from this an analysis of the area can be calculated after making some corrections. The method, useful though it is, has several disadvantages. The first is that commercially available apparatus is not usually designed to accept very large and irregularly shaped complete antiquities. This difficulty will be largely overcome, however, in an apparatus developed in recent years which will permit any object to be brought up against the working port and will yield an analysis of an area down to a small fraction of a millimetre in diameter. This apparatus will be useful for examining pigments *in situ* and for analyses of enamels and glazes. The second disadvantage of X-ray fluorescence is that the analysis concerns only a very shallow layer on the surface—and in antiquities the

surface has always altered in composition with the passage of time.

Another non-destructive method of analysis that has been applied to metal objects is that of neutron-activation. Here the antiquity is placed for, say, twenty minutes in a flux of neutrons such as may be found in an atomic pile. As a result of this exposure the elements present in the object emit gamma radiations of various energies that fall off in intensity with the passage of time. This radiation is analysed and the result can yield an estimate of the kind and quantity of the elements present in the whole object, not the surface alone. The method has been used to determine the silver content of Greek coins of the sixth and the fourth centuries B.C. One was discovered to have been an ancient forgery.

A final example of an advanced analytical method concerns the mass spectrograph. This instrument can make the best use of a very minute sample. It yields a "spectrum" containing lines representing not only elements but isotopes of the elements present. This has proved particularly useful in the case of the element lead, which happens to contain four major isotopes whose relative abundances vary with the geological age of the mineral deposits from which they were obtained. As a result of work in progress it appears possible to prove that lead found in a particular antiquity did not come from a certain mine, and it may eventually become possible to identify positively areas from which the lead could have come. For example, ancient lead from Tara, in Ireland, has been found to compare with Italian lead, but not with lead from England or Wales. Hence we have an argument favouring the existence of trade between Ireland and Italy. This method can be applied to lead found not as metal but in chemical combination in lead-glass or glazes, in pigments, or even to particles of lead obtained from leaded Chinese bronze. The mass spectrograph can be used in analysis of all elements, not only lead, and could well replace an optical emission spectrograph in a museum laboratory with many fringe benefits.

Enough has now been written to indicate the number and wide scope of the arsenal of investigatory weapons. Each has its own sphere of usefulness in the modern museum laboratory. To a considerable degree its usefulness is proportional to the facility with which it can be employed. In many cases, for example, similar information about a particular antiquity can be obtained by either the slow process of wet chemical analysis or a comparatively rapid spectrographic method. A wet chemical analysis, together with the standardization and replication needed to ensure that the result is worth the effort, may well occupy several weeks. On the other hand a group of three or four spectrographic analyses, with all the checks necessary, need take only one day once calibration curves have been constructed. Of course the capital outlay required differs in the two cases, but in a large museum containing many objects and the possibility of a great amount of investigatory

work, clearly one of the spectrographic analytical techniques offers many advantages over the slower chemical methods.

We now appear to be at a turning point in the history of laboratory services to museums. Hitherto there has been a sharp distinction between conservation and research. On the one hand, conservation has been concerned with the practice of routine methods, admittedly many of them of an advanced or sophisticated character. For lack of facilities, a particular method has been selected largely on the basis of the conservator's long experience and with a minimum of scientific control.

On the other hand, research into specific problems raised by archaeologists and curators has been prosecuted by post-graduate students in various well-equipped institutions, each working on his own problem and perhaps leaving the field of museum interest altogether as soon as his research has been completed. As a result of these isolated researches, conducted on antiquities or on samples begged or borrowed from whoever would lend, we are beginning to have at our disposal a corpus of factual information concerning the materials and methods used to make antiquities in various periods and areas of the world.

Hitherto, such information had to be sought deliberately by prolonged research whenever any particular problem arose. Even now, fundamental research of this nature needs to be intensified, and there is no better place to carry it out than in a museum where study collections already exist.

Now that so much information is already available the individual museum curator, pressed as he is by day-to-day practical problems of cataloguing and exhibition, can begin to hope for a rapid scientific check of the attributions of doubtful objects in his own collections. The curator can obtain this service only from a laboratory that is well equipped and experienced in the use of its apparatus on museum problems, so different from those encountered in industry.

Clearly, the museum laboratory of today should provide scientific services to both conservation and research. It should have a large arsenal of weapons, maintained sharp by routine application to day-to-day problems of restoration so that each is in readiness for use upon the isolated special problem when it is presented.

An even more efficient use of expensive facilities and skilled staff can be made when a laboratory concurrently carries out research programmes based upon the museum collections. Then conservation and research can proceed side by side, each fertilizing the other. At present there are very few, if any, archaeological museum laboratories in the world that operate in this balanced manner, almost every one being heavily biassed toward either research or routine conservation. It is to be hoped that the conservation department at the ROM will become a well-balanced unit.

STAINED GLASS IN AUSTRIA

The historical setting of a new ROM *acquisition*

H. Hickl-Szabo, Assistant Curator, European Department

The Royal Ontario Museum, with the help of the Laidlaw Foundation and other generous friends, has acquired for the European Department a panel from a late mediaeval stained glass window. It is documented as coming from the early fourteenth century parish church in St. Leonhard, a small spa in the Lavan valley in Carinthia, Austria.

The panel shows the full length figure of St. Catherine of Alexandria stepping out of a Gothic canopy, its four arches shown in perspective. The spandrels of the front arch are decorated in schwarzlot technique with Gothic tracery, the sides are the front columns of the canopy, and at the bottom is a simplified version of a mediaeval castle, perhaps intended to be that of her father, King Maximian. St. Catherine holds in her left arm her attribute, the wheel, and in her right hand a sword. The colours are black, light blue, dark blue, violet, a honey-coloured gold, green, red and white. There is surprisingly little corrosion, and this implies that the panel was in a healthy climate for several centuries. It is also free of cracks and breakage, and its condition is far above average.

This panel and twelve others appeared this spring at the sale of the Stockett Collection in London. It is one of eight mentioned by Walter Frödl as having formed window No. 6 in the North Choir in the church in St. Leonhard, and as having been on the left in the bottom row. While Frödl has admirably described the wealth of stained glass in this church and in many other churches and monasteries in Carinthia, he unfortunately never saw these eight panels, and had to rely on second-hand information about them; he was satisfied, however, that the two panels in the bottom row did not belong to the same cycle as the other six. The "St. Agnes" panel, said to have been on the right of ours in the bottom row, differs from it and from the six above, and does not concern us here.

Frödl's suggestion that the "St. Catherine" panel does not belong to the cycle of the other stained glass in the church is quickly verified by comparing its obvious characteristics with those of the other group. Apart from a small difference in size—which in itself may be meaningless—we must note (a) a small discrepancy in the colour scheme (the emphasis on green is much greater in the other panels than in ours), (b) the architectural framework of

From the left:

Magdalenen panel (1150)

Panel of the Foolish Virgin, Friesach (c. 1270)

Annunciation panel, St. Leonhard i/L (1330)

The ROM's new acquisition, St. Catherine, from St. Leonhard i/L (c. 1400)

the "St. Catherine" panel does not match the geometric borders of the other group, and (c) in style the "St. Catherine" panel is later, as will be proved, than the other stained glass in the church.

While in many other countries the development of styles forms a more or less uninterrupted chain, in which each period is linked to the following and the previous one, the picture is different in Austria, where the individual stages of progress are not connected with each other. One reason, though not the only one, will come to light if we illustrate a number of relevant examples: that is, the extremely slow and sporadic infiltration of outside inspiration and its translation into a craft so specialized as stained glass.

The documented history of stained glass in what is now Austria goes back to 1150. Of this date is the Magdalenen panel from Weitensfeld near Gurk, and its generally accepted prototype, the Antiphonary of St. Peter from the Codex Salzburgensis. Although the style of both shows Cluniac influence

with a strong current of Byzantine, it should be noted that the prototype as well as the panel were made in Salzburg. The panel stands in splendid isolation, surpassing in quality and sophistication even the contemporary "Apostle" panels in Regensburg.

By the beginning of the thirteenth century the Alpine area seems to have become a melting pot of styles, not all of which put down roots at once or grew at the same rate. Communications did exist, chiefly through the church, but they were limited, and outside influences filtered in only sporadically.

One of the most important manifestations of a stylistic infiltration is the fresco in the west doorway of the Cathedral in Gurk, dated about 1265–70, the importance of which, not only for Austria but for the whole world, is established. It shows the Italian influence brought in by the Dominicans, but it is definitely a Carinthian monument and the prototype of the panels of the "Wise and Foolish Virgins" of about 1270 in the church of St. Bartolo-

meus in Friesach. These are undoubtedly the best examples of the "Zackenstil", peculiar to the Alpine area, and the second stage in the development of Austrian stained glass. How little this stage is connected with the previous one is evident, although these panels too came from a Salzburg workshop.

The roots of the third stage go back to the year 1181, which is considerably earlier than those of the previous stage, but there is no indication that the style flowered before 1330. This slow development illustrates the length of time that can elapse before an infiltrating style ripens in an Alpine area. Of special interest to us is the fact that this new development leads directly to the corpus of stained glass in the church at St. Leonhard, although not to our "St. Catherine". 1181 was the year in which Nicholas of Verdun made what the world considers his *magnum opus*, the enamels of Klosterneuburg, originally the decoration of a type of pulpit called an Ambo. The work was commissioned by Werner, Abbot from 1167 till 1194, and his was the spiritual concept of the enamels executed by Master Nicholas. An Ambo, however, though itself conspicuous, does not display decorative details to advantage, and this may be one reason why the work did not at once inspire other craftsmen. Some time between 1322 and 1331 the monastery was destroyed by fire; it was rebuilt by Abbot Stephan von Sierndorf, and probably at this time the enamels were reset to form the so-called Klosterneuburg Altar. Only then was their impact on other crafts felt. Their stylistic influence on stained glass can be seen directly in the Ambulatory of Klosterneuburg in the panel of the "Birth of Isaac" (about 1330), and in the more provincial, indeed rustic, "Warning to Joseph" panel of similar date in Annaberg. The latter, and most of the panels in St. Leonhard, including the "Annunciation", were made in the Judenburg workshop, always provincial, and catering more and more to the rustic taste. In the main their stylistic standard is far below that of the Klosterneuburg prototype, proving that deterioration has taken place, yet the "Annunciation" and other panels in the church quite clearly derive from it, with their clarity of line and geometric borders, despite the predominant Alpine character. There is no denying the fact that the prototype was indirectly a western import, but in the time lapse of almost a hundred and fifty years it had been absorbed into the Alpine concept, which at that stage had relapsed into the realm of the Primitive, which recurring in the fourteenth century, hovers between the Symbolic and the Humanistic. It had lost subtlety and the power of communication.

Between 1385 and 1420 a new stage is reached in the Ducal workshop in Vienna. This again shows no links with the previous stages, but is related to contemporary work in Bohemia, such as sculpture, graphics and paintings, and it may have drawn inspiration from middle and later fourteenth century sculpture, painting and even stained glass of the Rhine area. Our panel must

be ascribed to this workshop on comparative grounds, the closest examples being the ones in the Ducal chapel in St. Stephan's in Vienna, about sixty panels in the Cistercian Monastery in Victring, most interesting to us because of their location so close to St. Leonhard, and for closer dating purposes, the "Annunciation" panel (about 1400) in the Freisinger chapel in Klosterneuburg. While the Cistercian rule originally forbade the use of the human figure in art "Vitreae albae fiant, sine crucibus et picturis" (the windows shall be white, without crosses and paintings—meaning without figure decoration), by this time the rule was seldom observed. Stylistically, the common denominator of all these examples, including our own, is courtly elegance, displaying the iconography in a most decorative manner; technically, it is predominantly the capacity to show architectural devices, such as canopies, in perspective, lending a strong three-dimensionality to the scene.

It is possible to explain the presence in the church at St. Leonhard of an isolated example such as our "St. Catherine" panel by referring to the close stylistic relation of the rather similar panels in Victring, but this is not the only explanation. The Victring panels were made in Vienna, as far from Victring as from St. Leonhard, which is also a long distance from Judenburg. We know, however, that a wealthy merchant of Judenburg, Heinrich Croph, and his wife Künigunde, were the donors of window No. 6, and it is generally assumed that they had a profitable business connection with St. Leonhard and gave the stained glass to the church to show their gratitude. The stylistic relationship of the "St. Catherine" panel to those at Victring is proof that they came from a common workshop; the presence of our panel in the window suggests that it, like the six above, was a gift, ordered by an unknown merchant in Vienna.

Looking at the style of our window we can say that it was made fifty to sixty years later than the Croph gift. At some time window No. 6 must have been damaged to such an extent that two panels had to be replaced. One of the two replacements, the "St. Agnes" panel briefly mentioned above, is quite obviously from the Judenburg workshop, but either slightly earlier or contemporary with the six above. It is slightly different in size and perhaps taken from a window which was being blocked up. The six upper panels all depict male Saints, and there must have been a general resetting in order to keep the two panels of female Saints in one area, since the "St. George" panel, immediately above the "St. Agnes", has a straight lower border and was presumably originally in the bottom row.

The question now is when did this rearrangement take place? According to the church archives both panels of female Saints had been in this window for at least a hundred and fifty years. While corrosion is evident in the stained glass at Victring, St. Stephan's and Klosterneuburg, the windows in St. Leonhard, including the "St. Catherine" panel, have been protected by the

high altitude and dry climate, so that one is inclined to believe that our panel was *in situ* for nearly as long as the other panels in this window. We therefore feel justified in suggesting that the replacement took place not many years after the installation of the other six panels, and that the "St. Catherine" panel was orderd by an unknown donor about 1400 for this special purpose. The fact that the Judenburg workshop had almost ceased to exist by that time makes it more logical that the donor commissioned the panel in Vienna.

TWO VANISHED BIRDS

The Museum obtains long-sought specimens of the great auk and Labrador duck

J. L. Baillie, Assistant Curator of Ornithology

Although possessing the finest and most representative collection of birds in Canada, the ROM, until recently, did not own a great auk (*Pinguinus impennis*) or a Labrador duck (*Camptorhynchus labradorium*), both of which have long been extinct. The late Paul Hahn, a patron of the ROM with a particular interest in extinct species, decided in 1957 that any efforts to obtain one of each for the Museum must be preceded by an inventory of the existing specimens. A questionnaire was prepared, eliciting information on the whereabouts of all the extant great auks and Labrador ducks, and five other species of North American extinct or near-extinct birds—passenger pigeons, Eskimo curlews, ivory-billed woodpeckers, whooping cranes, and Carolina parakeets. This was sent to all natural history museums and private collectors that might be expected to possess specimens.

During the next five years more than 1,000 replies came back, listing the holdings of the various collections. Not satisfied with this, Mr. Hahn, with characteristic initiative, followed up each completed questionnaire with a second request for whatever data there were for each specimen. Mr. Hahn died at age 87 in 1962, but the results of his labours were published posthumously by the ROM in *Where is that Vanished Bird?* which should be a boon to curators the world over.

The possibility of obtaining a great auk and a Labrador duck seemed enhanced when it became evident that there were, in fact, 78 great auks and 54 Labrador ducks preserved in collections, but there was no great auk listed in any Canadian collection, and only two Labrador ducks, in McGill and Dalhousie Universities.

Letters were then addressed to some of the owners of great auks and Labrador ducks, with the idea of making them an offer. This initial attempt proved unsuccessful with respect to purchase. However, the approximate value of the birds was established. Many said their birds were not for sale or exchange; others hinted that they might be interested if a high enough bid were to be made.

The situation remained unchanged until August, 1964, when a conversation the writer had with Dr. Ralph S. Palmer, New York State Zoologist, raised our hopes. He assured us that the great auk and the Labrador duck listed as owned by Vassar College, Poughkeepsie, New York, might be purchased. It was, in fact, an extremely delicate matter, as Vassar had consistently resisted all opportunities to dispose of their birds ever since they were received as a gift from Jacob Post Giraud, Jr. in 1867. Dr. Palmer, formerly on the faculty at Vassar, seemed the logical person to make further enquiries on our behalf. He opened negotiations at the start of the school term in September. The two specimens had been housed since October 17, 1921 at the American Museum of Natural History in New York, through a permanent loan arrangement concluded with Vassar by the late Dr. Leonard C. Sanford. It was just coincidental that Dr. Palmer was also well known to the curator of ornithology at the American Museum.

At Toronto, we initiated a drive for funds, as the purchase of these treasures could scarcely be made from the ROM's regular budget for specimens. Less than a year after our first conversation with our able agent, we had collected enough funds to buy the birds, had both the consent of Vassar College and the approval of the American Museum, and had the birds themselves brought safely to Toronto.

Altogether, about 200 friends of the ROM contributed to the fund, including major contributions from the Canadian National Sportsmen's Show, and the McLean and Atkinson Charitable Foundations.

GREAT AUK

The Vassar great auk proved to be of great historical interest, being the specimen once owned by John James Audubon, and used by him as the subject of his painting in 1836 and published in his famous double elephant-folio edition of 1838 of *Birds of America.* Audubon had bought the auk in London, England, before 1836, and it was the only specimen he ever possessed.

He presented the bird to his friend, Jacob Post Giraud, Jr., and it went to Vassar in 1867 with the rest of Giraud's collection of 800 mounted North American birds. Giraud was the author of *The Birds of Long Island* (1844), which was considered "the best piece of local ornithological work that had appeared up to that time". In 1841, his collection was thought by Professor

Spencer F. Baird to be "the finest collection of North American birds that he had ever seen".

When the American Museum of Natural History received the bird in 1921 for safekeeping, part of their arrangement with Vassar was to have the specimen remounted and placed in an air-tight case. This was done by George Nelson, taxidermist of the Museum of Comparative Zoology, Cambridge, Massachusetts, according to Dr. Palmer. When the skin was removed, the mount was found to be filled with German newspapers, indicating its Old World origin.

Concerning the earlier history of the specimen, we know nothing. A. Newton has stated that "It is pretty evident that most of the specimens of Great Auk and its eggs, which now exist in collections, were obtained from Eldey (Island, Iceland) between the years 1830 and 1844". According to W. Ley, approximately 72 great auks were exported from Iceland for museums and dealers during that period, a large portion of them reaching taxidermists in Germany, Holland and England, through Copenhagen, Denmark. Considering the fact that only 78 skins exist, it would appear that Iceland was in fact the source of most of the known specimens.

J. Cassin stated incorrectly in 1860 that Audubon's great auk had been "obtained on the banks of Newfoundland". As previously indicated this seems unlikely, as it had been bought in England and was stuffed with German papers. In addition, Audubon indicated that the only account he knew of a great auk taken on the American side of the Atlantic, was of one bird caught on the Newfoundland bank by Henry Havell, kept alive for a few days, and then released.

All specimens of certain New World origin are of skeletal remains only. The apparent lack of a skin from the New World is interesting in view of J. Steenstrup's statement in 1855 that at no place in the world, within historic times "has it been seen in so great abundance as on the islands off Newfoundland".

The breeding range of the great auk was on islands on both sides of the north Atlantic (notably on Funk Island, off the northeastern coast of Newfoundland). It wintered as far south as the Bay of Biscay (Gibraltar, according to J. C. Greenway) and Florida. The last individual was killed on June 3 (4th, according to Ley) 1844 on Eldey Island, off the southwestern tip of Iceland. Some idea of their former abundance on Funk Island may be inferred from the account of F. A. Lucas, who visited the island in the summer of 1887 for the United States National Museum. In two days hard work he and his party exhumed "thousands of bones", including more than 1,400 humeri.

According to Townsend, "The fundamental cause of the extinction of the great auk was the systematic onslaught made for various reasons by civilized

man . . . primarily for food, later for bait, for its fat and its feathers, and last of all, when it was doomed to extinction, the finishing blow was put by collectors". Historically man's ruthless and wholesale persecution of these helpless birds dates from 1534, when Jacques Cartier's men killed more than 1,000 in one day on Funk Island, to 1813, when Captain Peter Hansen's schooner-load of soldiers collected eggs by 'boat-loads' on Geirfuglasker. As indicated, eggs were eaten, and also the birds' bodies salted down for winter use, in lieu of salt pork. The feathers, utilized extensively for feather-beds and pillows, were removed from the flightless birds by scalding them in boiling water in huge kettles, or try-pots. As Funk Island was devoid of trees, the bodies of the birds, minus feathers, were used as fuel for the kettles. It is also on record that the Micmac Indians used great auks' gullets as quivers for their arrows. Even Nature herself appeared to lend a hand in the ultimate disappearance of the species, when in 1830 a submarine volcanic eruption off Iceland caused the skerry already mentioned, Geirfuglasker (the rock of the great auk), to disappear below the surface of the ocean.

LABRADOR DUCK

The specimen of the Labrador duck is of an adult male. As with the great auk, it belonged to Jacob Post Giraud, Jr., of New York. The bird went to Vassar with the rest of the Giraud collection in 1867, and in 1921 it was transferred on a loan arrangement to the American Museum of Natural History. At that time, it was placed in a matching glass, bronze-trimmed case, by George Nelson, at Cambridge, Massachusetts, and was apparently, as with the great auk, remounted by this taxidermist at that time. At the American Museum of Natural History it has been kept in a locked safe with the great auk for 44 years, in the Department of Ornithology.

G. D. Rowley claimed in 1877 that the bird was shot on the south side of Long Island, New York, about 1841. W. Dutcher said in 1891 that there is no proof of this, although admitting that "the greater portion of Mr. Giraud's life-long ornithological work was done on Long Island". J. C. Phillips says "Most of the specimens still extant in museums appear to have come from the vicinity of Long Island Sound".

The Labrador duck occurred only along the New World side of the north Atlantic, from southern Labrador to Chesapeake Bay, inland at least occasionally to Montreal and Philadelphia. The last one was shot on Long Island on December 12, 1875.

The published opinion of several authorities to the contrary, the extermination of this species evidently was not entirely brought about through the agency of man, as was the case with the great auk. Various descriptions of its flesh are unflattering—"not considered a delicacy", "strong, unsavory", and "dry and fishy".

It was not hunted extensively although between 1840 and 1870 a considerable number were said to be found hanging for sale in the New York and Boston markets. Often, however, they would be left hanging until they rotted, particularly if other more desirable species were obtainable.

Dutcher notes that "its familiar haunts were the sandbars where the water was shoal enough for them to pursue their favorite food, small shell-fish", and Outram Bangs suggested to Phillips that a likely cause of its extermination would be to suppose it "had very specialized food habits and that changes in the molluscan fauna, brought about by increased population along our coast, may have proved disastrous. Such changes in minute shell-fish are known to have taken place".

Greenway warns that any observations on the causes of its disappearance must necessarily be speculative, due to the limited written record concerning the habits of the species. He quotes Bangs to the effect that the lamellae of the Labrador duck's bill indicate specialized food habits. He thinks that it had a rather small, island habitat, which was probably raided by humans during the breeding season, and cites the case of the common eiders (*Somateria mollissima*) disappearing from the Maine coast as breeding birds as a similar phenomenon. Uncontrolled shooting and other miscellaneous forms of molestation reduced these eiders to a single pair by 1907. The local Audubon Society stepped in, placed a warden at the nest-site, and opened a campaign which resulted in a law prohibiting the shooting of the species. By 1958, the eiders were nesting on more than fifty barren islets off the Maine coast.

Although estimates of the former abundance of the Labrador duck range from "common" to "always rare", it is a fact that there is not a single record of its nest having been observed by a competent naturalist. Audubon never saw the bird alive, and A. C. Bent concluded that it never was a numerous species, and never was shot in very large numbers.

LABRADOR DUCK GREAT AUK

(Drawings by T. M. Shortt)

Mrs. Kay Riddell at Baldwin House

The Right Place

Crawford Grier

The difficulty of understanding one another experienced by people of different racial origins is in inverse ratio to the amount of their education. But, in the words of Alfred North Whitehead, "A diversification among human communities is essential for the provision of the incentive and material for the Odyssey of the human spirit. Other nations of different habits are not enemies: they are godsends." It is therefore desirable that as many of these people as possible be mixed in the process of education where they may educate one another in the fine and difficult art of becoming first-class citizens of a diversified world.

Thus it comes as a piece of very good news that Varsity's students from other lands, already numbering well over a thousand, are to have an official rendezvous in the form of the oldest, largest, and most historic house on the St. George Campus. It is to be known as the International Student Centre; the director of the Centre is Mrs. Kay Riddell, who for many years has been the University's No. 1 counsellor and friend of overseas students.

The house, built by the architect of University College, Frederick William Cumberland, was completed in 1860 and called "Pendarvis". Then reached by a driveway from the south, its number was 2 College Avenue. Now known as "Baldwin House", its number is 33 St. George Street.

The land on which Pendarvis was built was originally part of Park Lot 14, a grant from the Crown to the Hon. Peter Russell, administrator of Upper Canada after the departure of John Graves Simcoe — 100 acres patent 23 March 1798. When Russell died, his property was inherited by his unmarried sister Elizabeth, who in turn willed it to her cousin Phoebe Willcocks, wife of Dr. W. W. Baldwin of "Spadina". The Doctor, who doubled as a lawyer, was named trustee. The land remained in the hands of the Baldwin family until the 1850s when the Hon. Robert Baldwin (son of W. W.) had St. George Street and its adjoining lanes surveyed. St. George Street, incidentally, was named for no patron saint, but after Laurent Quetton St. George, an enterprising fur-trading Frenchman who carried on a thriving retail business in early York. It now divides the middle from the western canton of the Campus, whose western boundary is Spadina Avenue. Russell Street and Willcocks Street emerged from that survey of "adjoining lanes" and thus completed a foursome of familiar street names.

In 1856 Robert Baldwin sold or transferred the south-west corner of the lot (198 feet on the Avenue — now College Street — and 598 feet on St. George) to W. A. Baldwin. Cumberland bought it in 1859 for £1495 currency, and lost no time in building.

The Cumberlands lived in Pendarvis for 21 years. They were hospitable people, and could entertain on any scale. Few architects of that day could afford to build for themselves so large a mansion, but since 1850 Cumberland had enjoyed the lion's share of new construction in Toronto. With Thomas Ridout he had designed St. James' Cathedral (usable but incomplete in 1851; tower, spire, transepts, pinnacles, and finials were not finished until 1874) and the Model and Normal Schools on Gould Street. With William George Storm, who was both architect and contractor, he had completed the York County Magistrates' Court, the Mechanics' Institute — where the School of Practical Science had its birth and where its first classes were held — the seventh Toronto Post Office — now the offices of the Argus Corporation on Toronto Street — University College, the complete reconstruction of the central section of Osgoode Hall, and the Chapel of St. James-the-Less in St. James' Cemetery. Moreover, he was a well qualified engineer. As a young man in England he had helped to build the Plymouth branch of the Great Western Railway and had spent five years as an assistant engineer on the naval dockyards at Chatham and Portsmouth. In the year in which he put the finishing touches to Pendarvis he became managing director of the Northern Railway, thrusting north from Toronto to the wilds of Canada West. Time did not lie heavily on his hands. With Kivas Tully, architect of old Trinity College, and Sandford Fleming, who took the C.P.R. across the Rockies, he formed a professional group that was to become the Royal Canadian Institute; he organized and commanded

Above: Baldwin House, still occupied by the School of Business, is scene of garden party celebrating birth of International Centre. Guests included several Rotarian officers; 30 clubs in Rotary International have raised $200,000 for the renovation and furnishing of the House. *Below*: The verandas of an earlier era have gone. Since this photograph was taken, the Wallberg Memorial Building (home of chemical engineering) has encroached on the lawn in foreground and the Forestry Building, *left*, has been rolled up St. George street to make way for the Galbraith Building.

the 10th Royal Grenadiers; and, for good measure, he represented the Algoma riding in both the federal and provincial parliaments.

The peaks of entertainment that Pendarvis could reach are suggested by the fact that Cumberland was chairman of the civic reception committee when the University's only honorary sophomore, Edward VII, visited Toronto as Prince of Wales in September, 1860. But this scale was not habitual, despite a huge dining room and a ballroom that ran the full length of the south side of the house. So the sound of voices at the carriage entrance, or of conversation in the halls, or of politics over brandy and cigars in the library, or of summer chatter on the colonnaded verandas demolished by a bulldozer about a century later, more generally came from old friends, junior officers of the regiment, callers from the Institute, and teachers at the University — even those whose demands for space in the College building had been "so outrageous that the Governor-General authorized John Langton to say that he would stop the building altogether if they did not moderate their expectations". Among Cumberland's closest friends were Fleming, Tully, Storm, Daniel Wilson, Henry Croft, Langton, old Bishop Strachan, George Brown of *The Globe*, Sir John A. Macdonald, and Lord Dufferin. It is good to think that the house will be lived in once again.

Cumberland died in 1881. His widow built, on University land, a house that was afterwards occupied by Professor James Mavor, and sold her former home to Alfred Morgan Cosby, manager of the London and Ontario Investment Company, for $33,250. After Cosby died in 1900 the house was purchased by Walter D. Beardmore, a prominent Toronto wholesale merchant. Beardmore lived there until about 1912 when the Government of Ontario leased the property as a temporary residence for the Lieutenant-Governor pending the building of a new Government House in Rosedale.

Sir John Gibson, Lieutenant-Governor from 1908 to 1914, spent the last two years of office in Pendarvis, and was succeeded by Sir John Hendrie (1914–1919) who resided there until the new residence at Chorley Park was ready for occupation in 1915. Walter Beardmore's widow then returned to Pendarvis and lived there until 1919. Between 1920 and 1923 the Government allowed the use of the house by the Vet-Craft Shops, a place of vocational training for disabled soldiers.

By 1923, earlier sales of lots to the north had reduced the St. George Street frontage to 390 feet. In that year the Beardmore estate sold the property to the University for $210,000 and the University turned it over to the Department of History. It was then that the name "Baldwin House" was adopted. No Baldwin ever lived in Pendarvis, and Robert Baldwin died before W.A. sold to Cumberland. Between 1954 and the present day the house has been occupied, in succession, by the Faculty of Law, the Press, the Department of Mathe-

matics, and the School of Business. All these tenants have treated the house with the respect that it deserves. The Press sandblasted the exterior to restore the golden tone of the Ohio bricks, similar to those used for University College. The whole interior, except for the removal of the woodwork over some of the windows and the addition of a few partitions, modern plumbing, and the impedimenta of lecture room or office, has been extraordinarily well preserved.

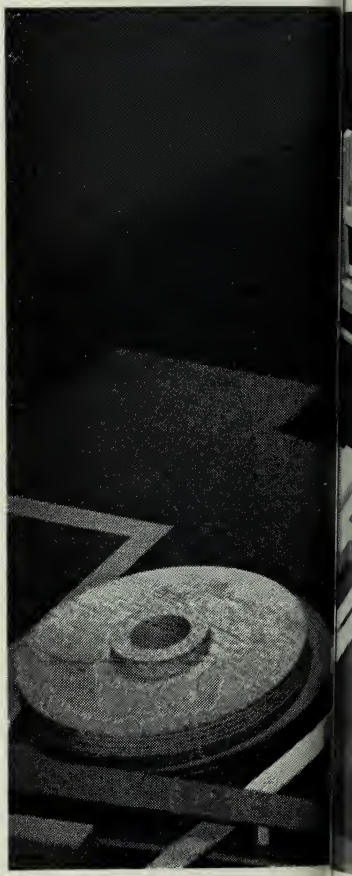
Cumberland has been mildly undervalued as an eclectic who could design (and did) in Gothic, Greek, or Roman as the mood indicated. Eclecticism in design may not be in vogue today but versatility, even in architecture, can be refreshing. Undoubtedly John Ruskin, who was a fellow student at King's College, London, profoundly influenced Cumberland's approach. Ruskin said, "You must either help your scenery or destroy it." The Normal School has gone, but look again at the Cathedral, Osgoode Hall, University College, or St. James-the-Less. Nowadays we put up the building and find it both difficult and costly to remake the scenery. Again, Ruskin said, "Those freaks of fancy, those jests in stone . . . if jest be in you let it be jested". Structural jest abounds at University College, both inside and out: some of it was carried over to Pendarvis.

However, let us not cavil at the experts but, as laymen, shop around Pendarvis. The golden bricks are greying once again, but the ageing process has not hidden the mortaring on the west façade. It is one-eighth of an inch thick; that is craftsmanship; you do not see it now. The two side windows of the library bay are of curved flowed glass. What is that tiny marble column doing in the middle of the bay? The south elevation has been disfigured by the loss of the gallery with its Doric pillars and its classical cornice, but the cut glass in the upper sashes of three windows is plainly to be seen. The central second storey window on the east is right out of the book. The carriage entrance at the south-east corner is flanked by two small Doric columns and, just inside the door, are heating grilles surmounted by marble tops. Was there central hot water heating in 1860? Why not? Canada had it first, ahead of Europe and the U.S.A.

If you include the basement — where there was a billiard room — the house contains 33 rooms. The woodwork and ceilings of main hall, ballroom, and dining room are unusually fine. In the dining room the fireplace is framed by Ontario marble — already it is a museum piece. A carved staircase, with a newel post of heroic size, leads to a second hall and to a stained glass skylight. Smaller stairs reach a smaller landing, more rooms, a glazed gable which protects the skylight and, eventually, the roof. Up there, six chimneys, thirteen flues, and decorative ironwork (clearly visible from street level) of imperishable maple leaves. A happy and prophetic thought — with no assist, one might assume, from either Mr. Pearson or the riding of Algoma.

Why not

Among the many high school students who saw the models was George Court, Jr., Burnhamthorpe Collegiate, Grade XII.



THE ASSIGNMENT for fifth year School of Architecture students was to plan and design a university on either:

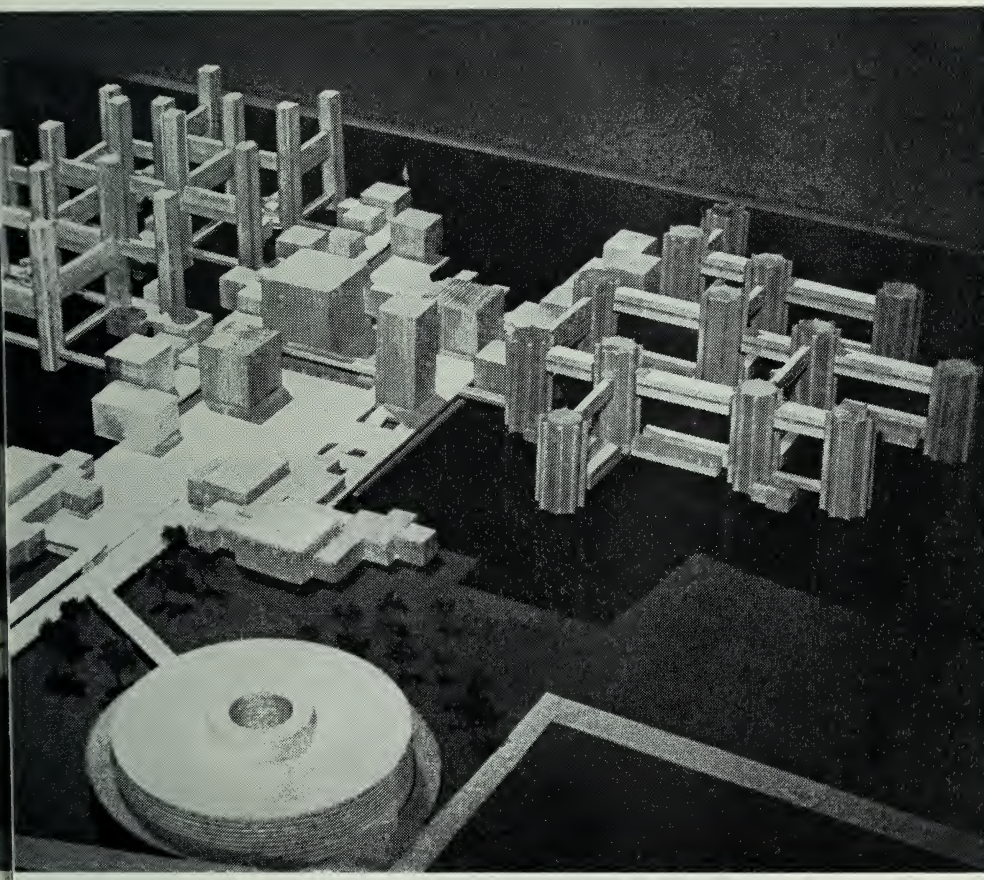
An urban campus on the Toronto lakefront, between Yonge and York Streets, or

A suburban campus on the northern edge of Metropolitan Toronto.

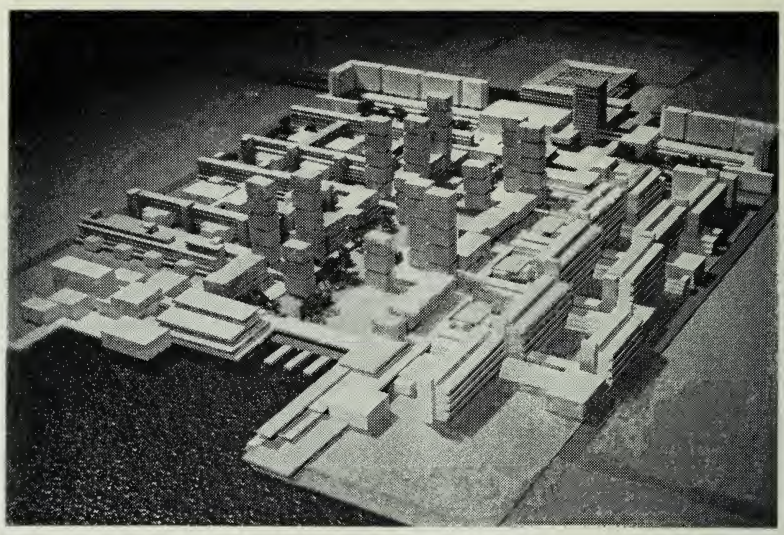
Under the direction of Professors John Andrews and G. A. Robb, they planned buildings for an initial student body of 15,000, and allowed for expansion to 25,000. They provided ample parking — ever a student concern. On the waterfront, provision had to be made for the Island ferry docks and, in the suburbs, the campus was to be linked with a future multi-lane No. 7 highway.

Some of the imaginative ideas of the students and their mentors for the universities of tomorrow are shown on these pages.

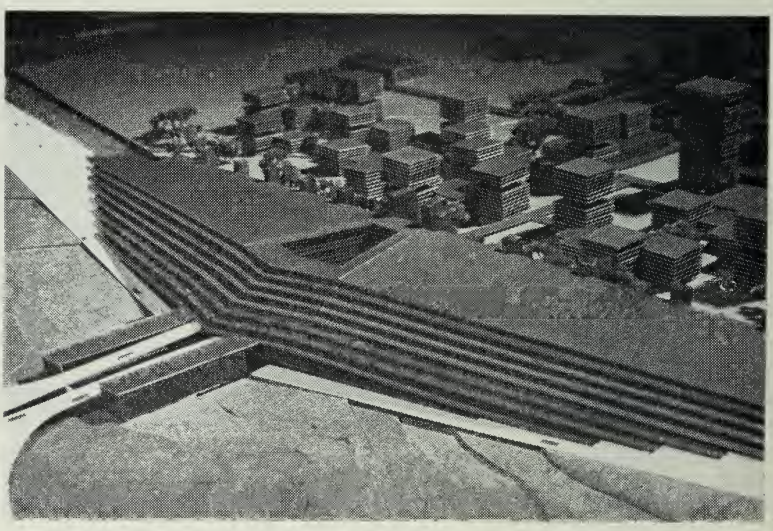
university in the bay?



The concept of Zenon Mazurkiewicz and John Vanstone, most of this university would be built on stilts in Toronto Bay. In the foreground, huge circular parking garages are conveniently located adjacent to the Gardiner Expressway.



This university of the future provides a haven for the Island ferry boats right on the lake side of the campus. The designers were Donald Awde, Joseph Dominik, Duncan Grewar, Sieghard Schmidt, and Paul Vaughan.



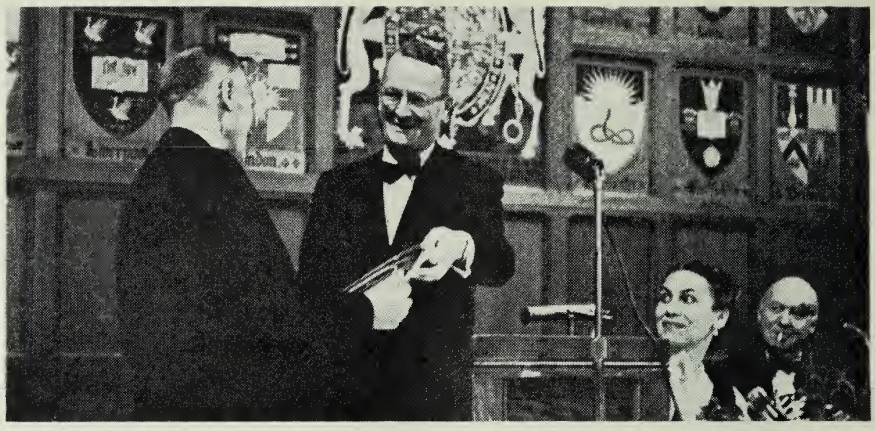
Vast parking garages beside a No. 7 super-highway dominated the "linear development" of "University of New Town", designed by Paul McIntosh, Cameron Ridsdale, Mary Rose, and John Wanzel.

THE UNIVERSITY AND I

(Continued from Page 35)

first was the use of the French language as the sole medium of instruction in all "Honour" and "Concentration" courses; and I am happy to learn that this practice is now being extended to the whole General Course as well. The second innovation was the introduction (a Canada first) of undergraduate and graduate courses in French-Canadian literature. The third, somewhat extra-departmental, in fact entirely under the auspices of the Ontario Department of Education, which paid the expenses and awarded the certificates, was the establishment in Quebec of a Summer School in Oral French for Ontario teachers of French. From 1926 until 1942 (when all Ontario departmental summer schools were suspended for the duration of the war) approximately 1,000 of our provincial high school teachers of French attended this brush-up course, some for many summers. They sat at the feet of eminent French-Canadian professors, including the outstanding literary critic, the late Monseigneur Camille Roy, Recteur of Laval University.

This school was held just outside, now far inside, the city of *le vieux Québec*, in the *Couvent de Jésus-Marie*, and the teacher-students were under a monastic vow to speak, sing, and dream in nothing but French for twenty-four hours a day (le français oui, l'anglais non!). As a result, high school inspectors of Ontario stated in their next annual report that the pupils throughout the province understood and spoke French with much greater facility. The immediate reaction of our provincial press, however, was somewhat less than enthusiastic, especially in the city of Toronto. After the first session, one evening paper, whose symbolic colour has never been "red", but in those days was a closely allied shade, somewhat orange to be more specific, damned the project with very faint praise indeed. The other evening journal, always claiming to be completely objective, saw political implications. Probably Howard Ferguson was selling out to Quebec in order to be chosen at the first Winnipeg Convention, in 1926, as the new leader of the Federal Conservative Party. At any rate, this paper gave over one whole page to a good clergyman of Kingston who damned both the Quebec school and its principal to eternal hell-fire. Indeed, this latter wolf in sheep's clothing with his French name (though sometimes corrupted to "Johnny Ray") and with patently evil intentions, was certainly the devil incarnate, taking those innocent 103 Ontario Protestant teachers to a Quebec convent for the sole purpose of proselytizing them all, and, worse still, through them, all their thousands of pupils. Premier Ferguson, Minister of Education, stood firm, however, and allowed the devil-principal of the school, really of Swiss origin and with a somewhat militant Protestant background, to continue his evil machinations for almost twenty years without making or contributing to the making of a single



Dr. Moffatt Woodside, Vice-President and Provost, presents the retiring Chancellor with a silver tray "with the gratitude and affection of his colleagues".

convert to another Christian communion.

Many years after this Quebec school had been suspended, I urged that it should be resumed, for the purpose of preparing teachers to give French instruction in our elementary schools. I addressed the following words to the then Ontario Minister of Education in a speech I made during the Easter meetings of the Ontario Educational Association in 1958:

"What a privilege I have in addressing the Honourable Minister of Education! I now have the courage to ask you, Sir, to take by far the most progressive step ever taken in the promotion of the teaching of French in our schools. First, let me say that after almost half a century of effort in this direction, during which time I have witnessed pretty steady improvement in the high schools, on the oral side especially, I am convinced that if pupils were able to begin the study of French at least three years earlier than they do now, that is to say, before the advent of those extraordinary inhibitions peculiar to adolescence, they would make three times the progress they now do. Of course, the approach would have to be oral, with the use of phonograph and visual aids of all kinds."

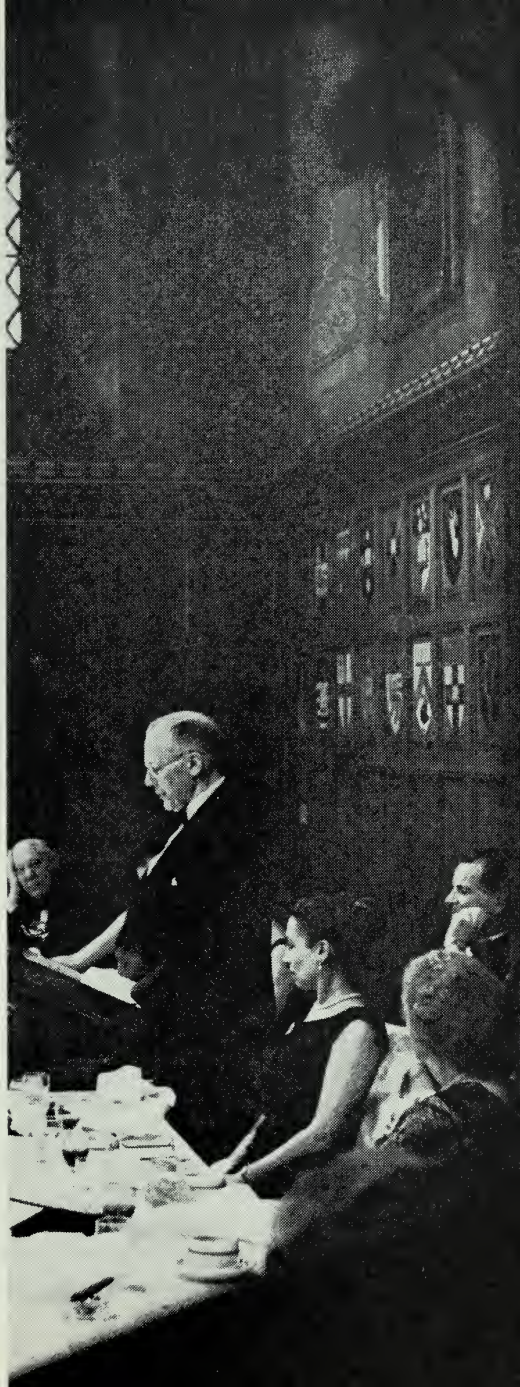
I then suggested the appointment of a sympathetic and intelligent committee to study the matter. The Honourable Minister of seven years ago gave no sign of approval, then or later, though more than one hundred newspapers throughout Canada did. I am happy to say that his successor of today seems much more receptive to reasonable suggestion from any quarter.

Up to 1958, in spite of earlier permissive legislation, only a few thousand elementary school children were learning French in the whole public school system in Ontario, and these

were almost entirely in Ottawa. Within three years, there were forty thousand and at last count, over one hundred and forty thousand. Two summer schools for teachers of French in elementary schools will be operating this summer and I venture the prediction — no, it would only be an educated guess! I know the inherent problems and shall be a very silent and circumspect prophet. I may add, though, that a sympathetic and intelligent committee has also been set up.

I have given an undue proportion of my time to this proposal of early instruction in French, and please do not imagine that I now think its implementation will immediately produce a completely harmonious Dominion. (I always liked that word Dominion and I still do). I have hesitated to make any public statement pro or con while the Bi. & Bi. Royal Commission is still in session, except to give the historic background of the problem to a group of teachers at their request. But would to God that Separatism did not keep bobbing up its unlovely head with such persistent regularity, as if to encourage the more moderate Nationalists to keep on opting out to the end of the road.

My nine-year tenure of office as Principal of University College and six years as Chancellor I shall pass over rapidly. The first of these appointments I accepted in order to try just one more device to get a men's residence for the College. Some of you remember what this device was, and that it worked. Two or three of my objectives for my double term of the



office which I shall be relinquishing shortly, have been only partly achieved, principally because of my inconvenient eight sentences to solitary confinement during this period.

The one episode that I recall with immense satisfaction, however, and which I shall enjoy relating, had to do with the official Convocation prayer. Few of you may know how unhappy we were that the various religious communions could not agree on the mode of address or the content of the convocational petition to the Almighty, and the several chaplains representing the different theological colleges each used a version of his own choosing, seemingly convinced that he would not be understood if he used any other. So it fell to the lot of a former head of University College, the Godless institution, so-called by Bishop Strachan, to invite the heads of all the theological colleges to meet in his office on a given day to discuss this matter fully. He expected that many unhappy sessions would be required before agreement or compromise could be effected; so he gave a fairly lengthy prologue on the desirability of uniformity and simplicity so that God and man would be sure to understand each other, and then awaited the first shot in the battle to ensue. Once again I shall indiscreetly name names, or titles. The Reverend President of St. Michael's College accepted the challenge without a moment's delay, with these words, "Surely the time has come when we can pray in common." "Right", said the Reverend Provost of Trinity. Those twelve golden words, echoed immediately by the Reverend Heads of all the other colleges, Emmanuel, Knox and Wycliffe, constituted a memorable heart-warming ecumenical triumph. And it took only about fifteen minutes to establish unanimously the text of the prayer that has been in use ever since.

I have no doubt that many of you feel that I am attaching undue importance to this incident. Perhaps, but may I say in defence that I give an enthusiastic welcome to any evidence of genuine religious unity, though I share Father Macdougall's misgiving that "it is no exaggeration to say that many fervent Christians are extremely puzzled by the dealings of what is still basically an ecumenical elite". And now that I am back in the confessional, I shall add that I have always had serious doubts concerning the efficacy of trying to teach religious knowledge in the provincial elementary schools. I tried it very early in my career and then decided it was not a job for just any Tom, Dick or Harry, and might easily promote more division than unity. Now this confession is going to shock my own padre. Do I hear him whistle?

I have been asked by many of my friends what I am going to do when I retire. I answer: (1) Finish my biography of Sir Robert Falconer, and (2) after offering a somewhat weak-kneed resistance for many long years to the increasingly materialistic trend of our present-day society, a resistance based on the text "that man shall not live by bread alone", I propose to do

From the Chairman of the Board a brotherly embrace

what I can henceforth in support of the Canada-Mysore freedom from hunger project, to enable the millions of starving humanity in Southeast Asia to get their share of the world's bread, to help them to help themselves in their struggle for mere existence. I invite your help too.

I retire from the University with a deep sense of gratitude and goodwill to every single member of this unique community, proud of my long and happy association with its scholars, administrators, students and staff of every branch I have met. To all I say a sincere thank you. To my successor in the office of Chancellor I give my warmest good wishes and a patriarch's blessing. Dr. Solandt began his teaching here in our own Faculty of Medicine, in the laboratory of Dr. Charles Best. He will be able to take a much more intelligent interest in the prospective developments in that University division, at least, than could his most unscientific predecessor. However, we shall all give what support we can to make this a great world-centre of medical research.

Our Faculty of Medicine already has a distinguished record in this field and deserves the tribute of the late

Dr. Elliott P. Joslin, the outstanding international authority on the treatment of diabetes. These are his words: "The whole world is indebted to the University of Toronto. . . . (and) to Frederick G. Banting and Charles H. Best, whose investigations resulted in the discovery of insulin. Every donor of as much as a single brick to this University. . . . contributed to this undertaking. . . . I am sure I speak for diabetics throughout all the earth in felicitating the University of Toronto for its share in blazing a new and easier trail for diabetics to follow. As for me, the event changed darkness to light".

I have been here for exactly half the life of the University of Toronto as such, and feel that I have witnessed the more important phases of its evolution. Since the granting of our Magna Carta, the University Act of 1906, by the Government of Sir James Whitney, we have made slow but constant progress under the guidance of wise governors who have given us a whole series of richly gifted Presidents. All have had one objective in common: to make this a better University. Some folk there may be who think we are smugly complacent. I doubt if self-criticism is more wholesomely rampant anywhere else in Canada, though we do have faith in our future and we do not knock our competitors' product. We are grateful to our far-sighted Chairman and Board of Governors for their intelligent zeal on our behalf, and to the Provincial Government both for its financial support and for the freedom of action accorded us in the conduct of our academic operations. While the teacher and student remain the heart and soul of our whole academic complex, we thank God, and once again the Board of Governors, for giving us a President, and now also a Provost, whose joint enlightened leadership and whose moral and intellectual integrity will continue to be a source of inspiration to every member of the University.

THE GOLDEN YEARS OF S.P.S.

(*Continued from Page 8*)

culture along with our science, notably from such as Professor "Alfie" Baker, Professor DeLury and Dr. McLennan, giants of the past. No student dared to bandy words with such masters of caustic repartee.

I think probably the most interesting and enjoyable lectures were those of Dr. A. P. Coleman, the noted geologist. He took us later on a couple of field tours, one to Scarborough Heights and another to Foster's Flats, Niagara — memorable occasions. I sometimes think of Dr. Coleman, reported to have climbed a mountain at the age of 80.

Field work, which occupied much of our time, was all right when the weather was fine and warm — it was even enjoyable — but in the frequent windy, cold and rainy autumn days it was misery. You could tell the weather on any particular day by the condition of your field notebook. Field work still goes on in the old Taddle Creek Valley. Not so long ago I stopped by one of these survey groups

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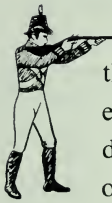
J. MACKAY HITSMAN



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and asked the captain if I might glance at his field notes. They were all very polite, thinking I was an assistant instructor. Their notes were very professional indeed, far better than our feeble efforts in 1901.

Before going in to write our first year's final exams, one of our class was heard to say, "All those laws and formulas are nice to know, but you can get it all out of a handbook when you're on the job." I found out that he had already failed once.

Thus ended our first year, and our class scattered to the four winds, to return (except for those who failed or had to write Supps) about the end of September, 1902. I was then just eighteen.

ENTR'ACTE 1902

Most of this may seem autobiographical and irrelevant, but is fairly typical of the average student's vacation. There was little difficulty about getting a summer job. Anyone who couldn't get on a survey or in a mine or machine shop could go to England on a cattle boat.

After the exams, I visited my studymate, Lou Hara, for a few days in Merritton. Lou had one of the quickest and most perceptive minds, was a natural tennis player, and could read the most intricate piano music at sight. Those were the palmy days of the Mendelssohn Choir, when a number of members, as far away as Hamilton and St. Catharines, would attend weekly rehearsals regularly.

You couldn't get tickets for the concerts in the ordinary way, but had to apply for permission and take what allotment they would grant. A well-known choirmaster told me recently that it would be impossible to recruit a large choir and rehearse them to such a degree of precision and shading in short "A Capella" numbers as did Dr. Vogt. He said such works could only be produced now by comparatively small professional groups.

Dr. Vogt was also organist and choirmaster at Jarvis Street Baptist Church where the choir was largely of Mendelssohn Choir members. Lou and I often went to services there and listened to Dr. Vogt's setting of the Lord's Prayer and motets by Gounod and Mendelssohn.

To return from this digression, the principal feature of my visit to Merritton was the arrival of one of those new-fangled automobiles which Lou's father had ordered. It was a Pierce Motorette and was driven from Buffalo and delivered by a woman driver.

The car looked like a doctor's buggy and had a vertical steering post and I still remember the famous name Dion Bouton on the engine. You had to stop to let horse-drawn vehicles pass, and the horses went wild. Now-a-days what horses are left don't seem to give a hoot. Another annoyance was the continual boiling of the radiator, which had to be replenished frequently from wells by the roadside.

Engineering is a profession of wanderers, and one of my regrets is that I lost touch with Lou, who spent his life on the Welland and Cornwall Canals.

Continued

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* estimate for 1970's – $11,684

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I got a job as chainman on a Dominion Land Survey, negotiations being carried out by letter to a prospective boss in western Ontario. When the surveyor met me on the train to the West, he said to himself, as he later told me, "I've been sold!"

Arriving at Yorkton (Assiniboia in those days), our party of a dozen all told started with two wagon teams on the trail for our 135 mile trip to the north of the Quill Lakes, where lay the townships we had to sub-divide. Construction of the extension of the C.P.R. from Yorkton to Prince Albert was just being started. We followed the low embankment until it ended at a tumble-down shack with the cryptic name SHEHO inscribed on a rough notice-board. We recognized this as the end of the line, and, solemn thought, our jumping-off place "into the blue". It took us two full weeks to complete the journey as the country was flooded, waist deep much of the time.

My co-chainman was a mathematical master from a Hamilton high school. He had worked himself to a shadow and suffered from chronic dyspepsia which he thought survey life might cure. He told me at the start that he couldn't eat a raw egg without getting indigestion. Just before he left for the fall term, I saw him wolf down a soda scone with a slab of fat pork and a plate of cold beans with great relish and no apparent ill effects.

I foresaw Spartan living when the grub consisted of oatmeal porridge, fat pork, beans and dried applesauce.

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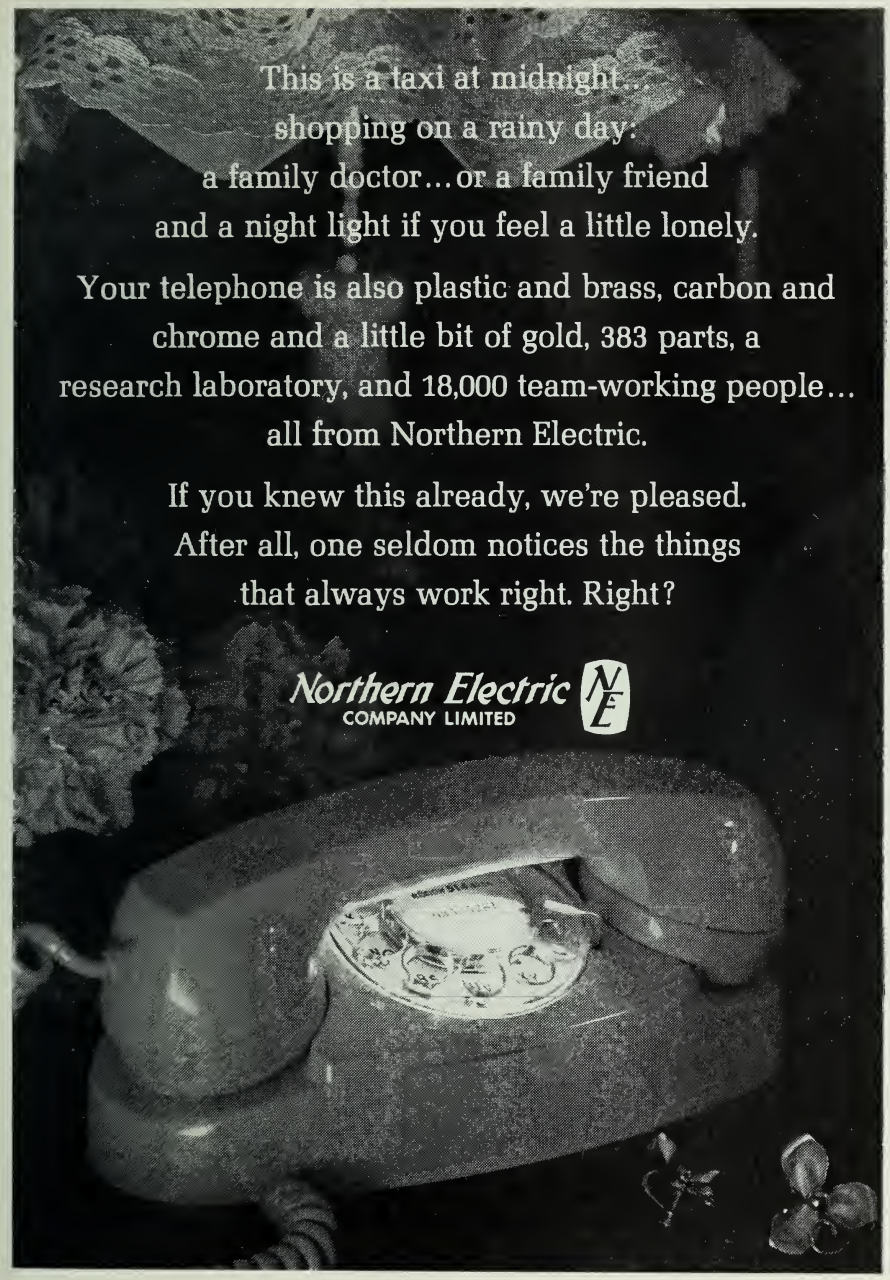
The so-called cook couldn't bake bread and fed us all summer on soda scones. I overheard the boss at the start tell him, "Give the boys lots of mush!"

At every flooded creek we had to double up the teams on each wagon. At one which some wayfarer had marked by a rough sign board reading "Wet Ass Crik", the king-pin of one of the wagons broke in mid-stream and we had a rough salvaging job.

Two S.P.S. 0T3 men, Frank Henderson and A. Latornell, took turns running one transit party, while the boss ran the other. Frank was the first Roman Catholic I had really known, and I still think of him as one of the finest Christians I have met. As his beard grew, his aspect became definitely biblical. He never became emotionally disturbed, and I envied his serenity and equability. He talked little about his religion but never omitted his daily devotions.

I couldn't help admiring this, though I had already become an ardent follower of Darwin and Huxley, and had with me a copy of Richard Burton's "Kasidah", much of which I learned by heart that summer to the great disgust of the boss, a hard-shell Baptist. The boss objected to any Sunday activity, even shooting for the pot, but we always had a song service for him in the evening. We would howl such awful hymns as "There is a fountain filled with blood", at the end of which the boss would groan, "Beautiful sentiment", and finish the service with a sad "One day nearer the grave!"

Continued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We lived in an atmosphere largely consisting of flies and mosquitoes, but these diminished as the land dried out, and in spite of an unvaried and badly cooked diet, we got a glimpse of something that soon will be forgotten, the fresh spirit of an unpeopled land.

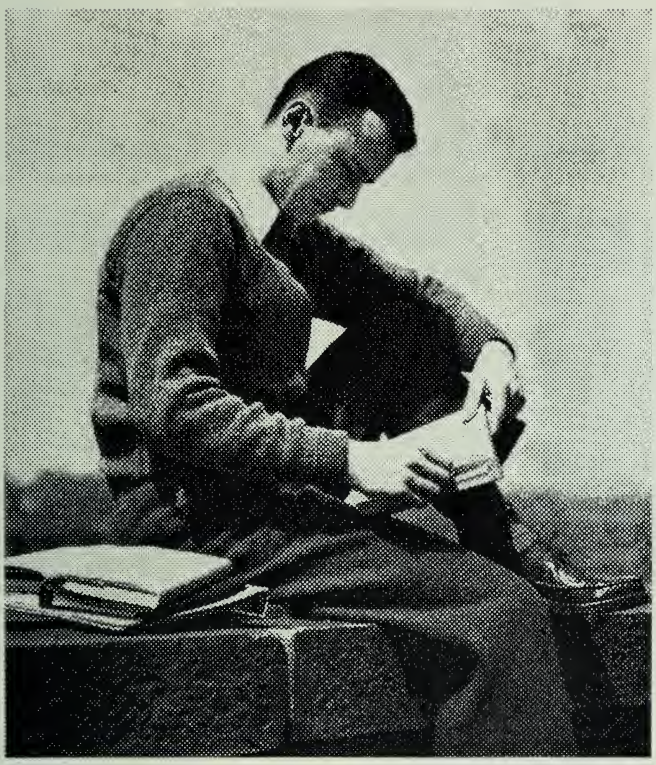
Our trip back to Yorkton in the fall took a mere four days on a buckboard.

SOPHOMORE YEAR 1902–3

"The Second year man, he
learns about the tap,
"And sizes up the freshman
with an eye to a scrap."

Except for intense study, I recollect very little about my second year. We had been told that if we could survive the sophomore year we had a fair chance to graduate. Perhaps 1902–3 was just a dull year, but my mind remains a blank except for one incident, an address in the Physics Building by Professor McLennan, famous for his lucid lectures illustrated by invariably successful experiments conducted by his assistant. The banked seats were crowded with B. & P. and other science students besides our S.P.S. group.

Towards the end of the lecture there suddenly rang out a peal from an alarm clock on the floor down front. The Doctor turned pale and his angry glance slowly swept the rows while the alarm was silenced. He then pointed to one student near the back and one halfway down and ordered them to the front. *Continued*



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"You were responsible for this outrage?" he thundered.

"Yes, sir," answered one, and the other courageously asked, "How did you know, sir?"

The Doctor replied, "My sub-conscious mind, while I was talking, noted that on several occasions you two had glanced at your watches. Students don't watch the clock during my lectures."

The applause that followed was quickly silenced, but it was such a feather in the Doctor's cap that the culprits got off lightly.

ENTR'ACTE 1903

This summer I got a job as draughtsman at $45.00 a month on a new C.P.R. branch line from Burketon to Bobcaygeon, with our headquarters at Lindsay in a small vacant house.

The chief was a big, grenadier-like man who had engineered for the C.P.R. for years. He had a terrific command of forcible language and so was admired and obeyed by all.

After briefing me on my duties, he told me I could have the front room over the office and put in a camp-bed, adding, "You won't be bringing any women around, will you?" I denied the allegation so vigorously that he was taken aback; in fact, I think he was rather surprised. However, he apologised in a fatherly manner and we were good friends thereafter – but I was beginning to get a glimpse of the facts of life.

There was a flat roof over what had

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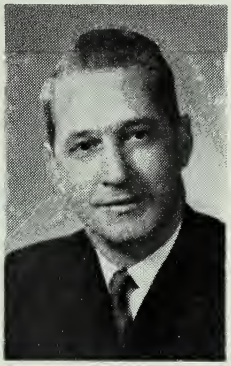

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once been the kitchen, and a window opened on it from the floor above. This had been equipped with rails on which a large and heavy blueprint frame could be heaved out into the sun. There were also a sink and a large galvanized iron tray for washing prints. The right-of-way of our 34 odd miles of line had to be printed in sections and carefully matched together. Later on I had to trace some Swiss-chalet type designs for stations, borrowed from the C.P.R., a few of which actually graced the completed railway. I kept this dark when later I studied and practised architecture.

Soon a raise to $60.00 per month landed me on top of the world. My three meals a day cost $4.00 a week at either of the two best hotels.

The people of Lindsay were very hospitable, and we were much in demand at parties, boating, dancing and progressive euchre, the last having passed into antiquity. Two of the local field staff, Bill Gourlay, 0T3, and Herb Keys, joined me in studying the new game of "bridge whist" of which we became enthusiastic exponents.

The branch line from Burketon to Bobcaygeon operated only for a few years before being abandoned. I have never revisited it, and wonder what has happened to the right-of-way.

Some years later, when I read Stephen Leacock's "Sunshine Sketches", I was sure I recognized Jos. Smith, Prop., Jeff Thorpe, Peter Pupkin and the rest. I had even gone on a moonlight excursion up the

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river and sat on the after-deck with the bank boys and their girls, and sung, "In the good old summer time" and "Moonlight Bay", the big song hits of those days. Unlike the original "Mariposa Belle", our steamer didn't sink, but it hurt me to know that Mariposa was actually Orillia and not Lindsay. However, you couldn't beat Lindsay for kindliness and hospitality.

SENIOR YEAR 1903–4

"The third year man'd rather
fall down a mine
"Than go into the depths of
Constructive Design."

Well, we did go into the depths of Constructive Design in a big way, but strange to say, little of reinforced concrete, the technique of which has advanced immensely since those days. In fact, I would say that the science of proportions, mixing, water content, curing, additives and winter precautions was little known in Canada. Pre-cast and pre-stressed members are comparatively modern innovations.

Beaumont Jarvis, almost forgotten now, was an architect who thoroughly understood concrete, a facile designer with an inventive mind verging on the Rube Goldberg type. He not only patented a system of reinforced concrete design which later he sold to an American firm, but he got royalties on the sale of gadgets such as handy kitchen utensils, humidifiers, reverse pressure taps, and so on.

He designed and built in the early 1900's a block of small apartments of reinforced concrete called "La Plaza" at the northwest corner of Jarvis and

Charles Streets. The detail and finish and the absence of surface cracks were amazing. There were graceful Spanish galleries and gables with moulded copings, and the parapet walls were only four inches in thickness. I watched them for years, but found little climatic deterioration, and felt sorry when they were demolished about 50 years later. I felt sorry also for the wrecker. He tried sledge and chisel, swinging weights and bulldozing, but it was like wrecking a spring mattress. He finally placed large hooks and cables over the walls and winched them down from the ground. How he then handled the bird cage of steel I never knew.

Little of Jarvis' work remains — even the beautiful chapel of Loretto Abbey on Wellington Place (1897) was demolished in 1961 and the name of "Beau" Jarvis, with all his talents and his ups and downs, is little more than a memory.

I doubt if the reader's interest would survive much of the above, so I turn to the two really important events of this memorable year. The first was The Great Hose Fight between Varsity (Arts) and S.P.S., the cause of which is hidden in the mists of time. Our leader was "Bull" Ritchie, one of the immortals who won the first Grey Cup title in 1909. "Bull" was then Vice-President of the U. of T. Senior Football Club. You can see in the old photograph his formidable figure below that of his indomitable captain, John Newton.

It was indeed a damp, uncomfortable fight. A solid stream from the

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fire hoses swept the corridors of the main building and confined many helpless and fuming professors in their studies until the water was turned off at the main. The hoses were cut into short lengths and, with the brass nozzles, carried off as trophies to decorate the walls of studies and frat houses. I can't recall the amount of damage caused, but we all had to dig deeply into our pockets, and it may be said that the Bursar won out in the end.

The second important event occurred during the exams in April 1904. Lou Hara and I were plugging up the last two exams, Astronomy and Theory of Least Squares, forgotten now in toto, but then of vital importance to us as embryo land surveyors. We were starting on an all-night session in the library of the big house at Spadina and St. Patrick, and noticed an increasing glow on the drawn blinds. The stars in their courses and the theory of probabilities vanished as we raised the blind and found the south-eastern heavens a mass of roaring flames and smoke.

That night we spent watching how great buildings could swell and expand their walls till floors and roofs crashed in, flames leaped into the sky and flying embers carried the destruction relentlessly along, forcing the watchers to a hasty retreat. We dragged ourselves home from the great Toronto fire of 1904 in the small hours and, believe it or not, didn't do too badly that day on the exams.

When, late in the summer, while surveying near the old Battleford Trail, our exam results arrived, there was my name at the head of the list as winner of the T. Kennard Thompson prize for Civil Engineering. Here, as I always maintained, was proof of the injustice of the system, for I knew that Arthur Wells, who came second, had more practical engineering in his little finger than I had in my whole make-up.

EPILOGUE

"Then shout, boys, shout for the S.P.S.
"Whose motto is meekness and peacefulness."

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(Note: Does anyone know the author of these famous verses? Also of the music, which is strongly reminiscent of one of Haydn's more robust Minuets?)

I re-visited the Old Brick School not long ago. The tower door now had an efficient and quiet door-closer. The hall was spotless, and – horrors! – a woman was polishing the floor. (I don't remember ever seeing a woman in the building from 1901–4.) There had been considerable alteration of the plan, and I groped around for the stairs as I remembered them, but they had been enclosed to comply with city by-laws. The old building was not the fire trap it had been.

Up the stairs I went, towards our old draughting room and found it considerably shrunken in size. There was no sign of the circular gratings in the floor, and at the few tables (another shock!) there were GIRLS working!

I wandered eastward along the old familiar hall and was confronted by a sign "Ladies". Now I knew that the glory had departed – not from the world of engineering, but from our old and fixed idea of a world of men.

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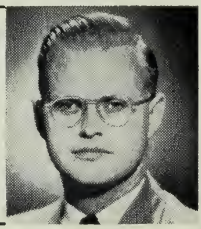

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CHANCELLOR SOLANDT

The Cover portrait of Dr. Omond M. Solandt is from a colour photograph which The Varsity Graduate commissioned Ken Bell to take for this Annual Reports issue. Taking office last July 1, the 23rd Chancellor of the University of Toronto was installed and presided at his first Convocations in the fall of 1965.

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REPORT OF THE PRESIDENT

To the Governors and the Senate of the University of Toronto

In current discussions of higher education no word is used more loosely and more portentously than "multiversity." It takes its place with escalation as a word that cheerfully reminds us of our decline. It began as a useful piece of shorthand, a way of expressing the complex nature of a modern university. Then it began to develop a faintly disparaging connotation and in the last year or so has become actively pejorative. During the Berkeley uprisings so minutely reported last year it became fixed in the popular imagination as a word of solemn foreboding. Actually there are no logical reasons why it should have acquired these associations. A large complex university is the dominating type in North America, and the term is no less applicable to Harvard, Yale and Chicago than it is to Minnesota, Illinois and California. In Canada all the provincial universities, and most of the long-established ones, are multiversities and would be examples of arrested development if they were not. We can, I think, clear away the vague and menacing associations by establishing the common characteristics of the multiversity, or to use a more exact and less pretentious term, the complex university.

I begin with the most obvious characteristic—the existence within the university of a variety of divisions with distinctive academic patterns and, frequently, with special relationships with outside professional bodies or with governmental departments. In the University of Toronto, for instance, there are some 35 academic divisions concerned with teaching and research ranging all the way from interdisciplinary associations with a slight administrative structure to a faculty like that of Arts and Science, with 24 departments, many of them with a teaching staff and a budget rivalling that of a small college. The

The complex university rigorously adheres to its minimum academic requirements

diversity of academic structures is matched in the complex university by the diversity of the student body, both in academic achievement and in social background. The student body bears little resemblance to the homogeneous group that made up the typical liberal arts college of only a few decades ago with its predominantly upper-middle-class origins and its uniform level of academic achievement. The complex university has its minimum academic entrance requirements to which, if it is wise, it rigorously adheres, but such qualifications do not open the doors to the whole variety of academic disciplines. In some faculties, such as Medicine, there are comparatively few places available and the resulting competition eliminates all except those in a high academic category. In some courses, such as Mathematics, Physics and Chemistry, experience dictates the necessity for high achievement in the subjects of specialization if the student is to survive and prosper. In the complex university, then, there is no simple set of entrance requirements. There is a basic requirement and beyond that a multitude of variations.

The complex university is, like all institutions of higher learning, concerned with teaching, but it also accepts as a responsibility no less urgent that of expanding the area of knowledge. Research is thought of not as additional, extraneous or ornamental, but as another important function of the university. There is some responsibility, too, for the dissemination of the new knowledge, although

much of the task here is left to other agencies of society.

Finally, the complex university seeks to give administrative coherence to this varied and colorful world; and it does so by methods used elsewhere —by division of authority, careful allocation of resources, and systematic planning. The methods are not dissimilar to those used in simple unitary universities, but they are more visible, and, therefore, more susceptible to criticism.

The very contrast between the complex university and the traditional university, a contrast as sharp, so Clark Kerr suggests, as that between the city and the town, creates a sense of uncertainty and suspicion. The new structure lacks unity; it appears to minimize human values and endanger the ideal of the community of scholars. To this criticism, which has become a litany in the popular literature on higher education, there are three possible kinds of response. We can accept the criticism as valid, but then go on to say that nothing can be done about conditions that are simply the reflection of social change; that we should abandon any attempt to secure a sense of community and concentrate on the rapid and efficient processing of as many students as possible in as short a time as possible for specific professional goals. (This presumably is one of the motives for the introduction of the undergraduate trimester system, which is an adaptation to education of assembly-line techniques in industry.) Or we can take exactly the opposite point of view and declare these developments to be so inherently bad that they must be checked at any cost. The great machine must, in the words of the Berkeley schismatics, be "brought to a grinding halt." This is the attitude of Paul Goodman who advocates the dissolution of the present university structure and the setting up in its place of small communities where teachers and students work together in preordained harmony. Finally we can take an attitude of liberal realism; we begin by trying to understand what is going on and why it is going on, and then we try to distinguish between basic principles and useful machinery. We do not abandon the basic ideals of the university—unity, interrelationship and sense of purpose—but we do not see in the adoption of new methods the spurning of old ideals. We recognize that change brings tensions, and that such tensions must be patiently resolved. Let us glance at some of these tensions, first as they appear among the students, then among the faculty.

The complex university has a student body that is increasingly aware of its separate and distinctive nature. In large part this is simply the reflection of size and growth; university students are still a small percentage of their age group, but the absolute numbers grow rapidly, and they are now more representative of all social classes and all ethnic strains. The student is likely to have a better idea than his predecessors of his academic goals, and he is clearly a far more sophisticated person—exposed at an early age, for good or ill, to the

Student and staff attitudes are changing in today's complex university

values of the adult world, and accustomed, in the permissive atmosphere of home and school, to act on his own convictions. All these factors strengthen his sense of identity both as an individual and as a member of a group. Within the environment of the complex university students tend to see themselves as a power group that must assert its position and resist sternly any attempt at assimilation, no matter how benevolent. This is the attitude that has given a sharp edge to student government and an unusual seriousness to student enterprises. During the last two years there has been a steady movement towards the autonomy of the Students' Administrative Council. Controls have always been exercised liberally and flexibly, but certain theoretical restrictions, particularly of a financial nature, existed, and these the students found irksome. The S.A.C. now has control, both practical and theoretical, of its own financial resources.

While the atmosphere of the complex university contributes to separateness, self-identity and the sense of corporate power among the students, it reawakens at the same time nostalgic regret at the passing of the old intimate and paternalistic order. Demands for freedom and autonomy are accompanied by requests that the senior members of the community take a deeper and more personal interest in the student; that the university take the responsibility of cushioning the shock of the new, demanding world. The university is still *in loco parentis*, even

though the parental role must be expressed obliquely and tactfully through special agencies. An event of the year that received a great deal of comment both within and outside the university was the establishment of a counselling service. It arose partially out of representations made by the students as a result of an inquiry that they conducted into the "mental health" of undergraduates. The committee examining the establishment of such a service under the chairmanship of the Registrar and Director of Student Services, Mr. Robin Ross, conducted a careful inventory of all the services available to the students on the campus, and discovered, as one would have expected, that they are numerous and frequently effective. The committee concluded that, nevertheless, there was need for another kind of service that would not be a part of the formal administrative structure and would occupy, as it were, neutral ground. The service would only occasionally be concerned with direct counselling; it would seek rather to make the student aware of the kind of specific help that he could receive and it would address itself increasingly to an examination of the changing emotional and intellectual pattern of undergraduate life. The first director of the Counselling Service is Dr. D. J. McCulloch, who is approaching his task with a nice sense both of its possibilities and limitations.

The tensions among the staff are more subtly juxtaposed than those among students. Some of the same conditions, however, exist. The rapid growth in the size of the staff also creates a sense of corporate strength. In the University, apart from the Federated Colleges, there are now over a thousand full-time members of staff; with the Federated Colleges the number is about twelve hundred. The average age at which a member of staff reaches a full professorial position is lower than it used to be and will continue to fall. The image of the professor as an elderly scholar enjoying in the twilight of his life the rewards of a long and devoted career is supplanted by the brilliant young researcher who, particularly in the sciences and mathematics, has often made his mark in his late twenties or early thirties. A youthful faculty will not be as prone as an elderly one to accept the status quo and to acquiesce in decisions handed down from above. At the same time, the complex university fosters loyalties that impede the growth of local solidarity. Specialization makes for an isolationist attitude, and devotion to one's discipline is more intense than devotion to one's institution. But with the rapid growth of the University and the necessity to make daily decisions about its future, a sense of institutional responsibility returns, and the faculty reassert their demand to be consulted about the shape of the institution that will rise and fall in accordance with their devotion and skill. Their advice is eagerly sought by corporations and governments and they are less likely than ever before to think that they have suddenly become untrustworthy when it is a question of determining the

We clearly need a new theory and practice of academic government

nature of their own environment. Interest in the University triumphs over fragmenting attractions, and concern for the whole is seen to be the only means of assuring the strength of the parts. The complex university, however, places formidable obstacles in the way of staff participation in the governing and direction of the university. Official bodies tend to be large and more concerned with democratic inclusiveness than with rational principles of representation. Taboos about the mixing of financial and academic matters lead to the sterilization of discussion. The complex university has thus brought into being a new kind of faculty interest and sense of involvement, but has not yet worked out the means to give them substance and significance.

We clearly need a new theory and practice of academic government. We need, first of all, to make some precise negative statements. We need to point out that a university is not a society of political equals in the government of which everyone has a right to participate. It is a society in which achievement and experience are given a special weight; where, although ideas are freely expressed and criticism unrestrainedly offered, the ultimate responsibility for decision rests with constitutional bodies. Even less is the the university a political democracy in which groups engage in electoral struggles for power. In some ways it is analogous to a corporation, but with the crucial difference that decisions are made only as the result of the study of factors that emerge at all

levels and in every sector. The administrator is not endowed with powers of independent decision-making. He is a student of the institution, a historian of values, attitudes and traditions; but he knows when to convert knowledge into action, and, in this sense, he is an initiator. He works with his material in much the same way as the scholar works with his; at some point each must decide when to set aside the study of sources and commit himself, either in words or in deeds. Just as the scholar must search for new sources of information, so the administrator must constantly seek out fresh advice. This will mean the creation of bodies consisting of members of the staff who have a special relish for university government and are trusted by their colleagues to express the general will, and of special exploratory committees on which senior undergraduate and graduate students will often have membership. It will also mean the progressive breakdown in the old quarantine against academic matters in financial bodies and financial matters in academic bodies. These principles lay behind the creation this year of the President's Council by the Board of Governors. It is a relatively small body consisting of five members of the faculty elected in certain constituencies, of twelve *ex officio* administrators, most of whom are also academics, the President, the Chairman and two other members of the Board of Governors. The Council will concentrate on the discussion of priorities in the expansion of the University; inevitably, it will examine all those questions in which academic and financial policy are intertwined. In view of the centrality of the questions posed to it and the strength and quality of its composition it will become an increasingly important body in the University.

The questions that I have discussed here were all sharpened in the minds of the academic community by the presence on our campuses of the commission on university government appointed jointly by the Association of Universities and Colleges and the Association of University Teachers. The Commissioners were Sir James Duff, retired Vice-Chancellor of the University of Durham, and Professor Robert Berdahl, a political scientist from San Francisco State College who had made a special study of university government. We await their report in the knowledge that it will explore problems of government frankly and objectively, and will stimulate discussion and promote reform.

A SOUND SYSTEM of university government will promote a sense of unity and community. It needs to be reinforced by the physical arrangements within the University. One of the most important of these is the arrangements for residences. This is the area where we have made the least conspicuous advance since we began our general programme of expansion and where now there is need for a concerted effort. We have rightly concentrated our efforts on the provision of basic academic accommodation in

We may experiment with residences in the form of the academic village

the form of laboratories, libraries and classrooms, but our residential obligations have been steadily mounting and can be delayed now only at the risk of profound and lasting injury to the University. If we had decided to follow the original proposal contained in the Advisory Planning Committee report of 1957, and had constructed a mass of apartment-like residences on the western edge of the campus, we might well have solved the problems of numbers, but in the process we would have destroyed the federated structure of the University. We wisely chose to relate residential accommodation to the college idea in accordance with the historical pattern of the University. The establishment of colleges is a complex and time-consuming effort, and the academic decision has meant delays in the provision of residence accommodation. But now we can proceed more rapidly. The Province has broken away from its long policy of non-support of residential accommodation and this, combined with the availability of Central Housing loans, has cleared the way for a more rapid advance. The detailed planning for the second section of New College has been completed and we are now ready to go ahead with the construction. The location and the form of Innis College were still unresolved at the end of the year but the problem was being narrowed and a solution is imminent. Until Innis College is assigned a place and given a time-table of construction it cannot assume its full place in the University.

For graduate students we cannot afford to wait for the development of a college system. Their needs are clamorous. At the present time we provide accommodation for approximately 170 single and married graduate students. The actual need has been calculated at 1,800 and will rise rapidly in the near future. Moreover, a high percentage of graduate students, almost 50 per cent, is married. We can no longer deny to these students what is available to so many of them in the United States—good, reasonable accommodation near the campus.

In a University which has sedulously eschewed uniformity there is room for a great variety in types of residential accommodation. New College has retained many of the characteristics of the traditional hall of residence although it provides an innovation in the close association of residential quarters with academic facilities. When its new wing is complete it will come as close as (possibly) we should aspire to the idea of co-educational accommodation. For graduate students, however, there is not the need for the kind of paternalism that we associate with undergraduate residences. Their needs are simple: provision of space for sleeping, eating and studying, close to laboratories and libraries. When additional land becomes available, we may find ourselves experimenting with residential accommodation in the form of the academic village, which has been described as "a street market of ideas rather than a cloister for sanctification." We also have a place on the campus for the further development of the co-operative residence with its basic philosophy of shared responsibility and its messianic belief in the virtue of human association. The co-operative philosophy emphasizes the educational function of the residence in the opportunity that it provides for the coming together of undergraduate, graduate and faculty member. Certainly the residence has a function beyond that of providing necessary accommodation. On a city campus like ours it can help to maintain the flow of university life when formal academic work has ceased. It is increasingly difficult in this large metropolitan centre to return from one's home to the campus for the evening lecture, play or concert, and the non-residential student finds himself culturally deprived. Moreover, residential life nourishes a feeling for the university that is not easily shared by the students who must face each day the long and exhausting trek to suburbia.

A SOUND SYSTEM of government and the provision of adequate and imaginative accommodation can together do much to overcome the bewildering sense of variety and complexity in a modern university. But at the same time that very variety and complexity engenders qualities that help to restore a sense of unity and purpose. The breakdown of paternalistic control has released creative energy. Students are prepared to take the initiative in fields that formerly they were content to leave to staff and

The teach-in—the climactic example of today's sense of student initiative

administration. The Students' Administrative Council, for instance, has undertaken the support of courses in corrective reading, and the University College Literary and Athletic Society has sponsored lecture series that are more adventuresome than most officially sponsored lectures. The climactic example of this sense of initiative was provided by a massive teach-in which was conceived during this year although not actually implemented until the opening of the new term. The initiative here came from a group of young members of staff, graduate students and undergraduates. The group undertook to take over and transform the teach-in as it had developed recently in the United States and convert it from a protest movement into a process of education. The undertaking met with extraordinary success and for a few days held the attention not only of the University but of a good part of the nation. Here was a demonstration that the huge classroom can be a vital classroom. The four or five thousand who assembled regularly in Varsity Arena at a succession of sessions was only a nucleus of a vast audience created by radio and television. Such an event could have occurred only in a complex university, for it required a large audience, a multiplicity of talents, and the authority of an internationally respected institution.

I think that this kind of non-official, non-institutional initiative will continue to be a characteristic of the complex university and will provide an essential means of bridging the gap

between the university and the community. I would hope, for instance, that we might develop under similar student and staff auspices a magazine of opinion and creativity. The scholarly periodicals of the universities have great importance, but they are forbidding to the non-specialist, and have little effect on the community. The student government, with increasing funds at its disposal, could solve the perpetual problem of financial sponsorship, and help to meet a great need in our society.

The complex university need not rely on groups to provide the initiative for fresh growth; it can be an initiator itself, particularly in the area of international aid. Indeed, the provision of international aid for the developing countries has become a vital part of institutional programmes and is helping to give to the university a sense of moral purpose that in other days we expressed in individual terms. By providing ideas and techniques the university gives aid in the most constructive fashion imaginable, for the trained mind is the resource in least supply. The University of Toronto has made and is continuing to make notable contributions in this field.

Among our international contributions, I mention a few that have been developed in some depth. The Department of Political Economy has an agreement with the External Aid Office and the University of the West Indies whereby staff members are provided to the latter university. This interest in the West Indies is reinforced by a number of schemes that are under active consideration whereby the School of Social Work will participate in research, teaching and service projects in Jamaica. The Faculty of Applied Science and Engineering is concluding a three-year programme of teaching assistance to the Karnataka Regional Engineering College near Mangalore, India. This has meant the sending, with aid from the External Aid Office and the Colombo Plan, of three senior professors each year. Since 1962 the Faculty of Medicine has had an association with the University of Lagos, with members of the staff occupying, for various lengths of time, senior posts in the Lagos Medical School. We are engaged in working out a programme of interuniversity faculty exchange among Duke University, the University of Toronto, the University of London, and the University of East Africa. This programme will have a particular significance to us in view of the role played by Professor R. C. Pratt of the Department of Political Economy in the establishment of the University College at Dar-es-Salaam, one of the three colleges of the University of East Africa. Professor Pratt, on leave from the University of Toronto, went to Dar-es-Salaam as Principal in July, 1961. At that time the college consisted of the Registrar and himself. When he left in July, 1965, the College had an enrolment of over 500, a teaching staff of 76, Faculties of Law, Arts, Social Science and Education, and Science, a number of specialized institutes, and a new campus with buildings costing nearly

International aid is an integral part of the university undertaking

3 million pounds. Finally, one must mention in general terms the work of the School of Hygiene, which, in its training of students from other countries and in its widespread international commitments, admirably demonstrates one of the principles of the Constitution of the World Health Organization: "The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and states."

I look upon such international aid as an integral part of the university undertaking and its support as a proper charge on government. It is not sufficient to send members of staff on short visits of good will. Developing countries need these intellectual resources for extended periods of time. This means that the calculation of staff needs must be substantially increased if the University is to have even a small percentage of its senior staff abroad at any one time in the service of developing countries. This activity is not entirely an exercise in altruism; staff returning from service in developing countries will bring back precious experience which will then be put to the use of the parent university. Canadian universities have only made a small beginning toward the breakdown of parochialism; they dearly need the open windows and the vistas that international participation can give.

THE COMPLEX UNIVERSITY is, by its very nature, an expensive university. It must provide simultaneously work

in a variety of fields that differ widely in cost; it must create a community that has both the intimacy of the village and the sophistication of the city; it must consider the needs of the society that extends beyond its doors and to which it is related in multiple ways. It is the special distinction of the Commission on the Financing of Higher Education, of which Dean Vincent Bladen was the dynamic chairman, that it fully recognizes the significance of the complex university and shapes its recommendations accordingly. For the first time we have an official recognition of variations in cost of educating different kinds of students and a proper assessment of the place of research.

In the fifties the universities were concerned about their survival as good teaching institutions. We are now appealing, not only for this, but for the means to emerge as centres of scholarship, which means research as well as teaching, international influence as well as local responsibility, a thrust into the future as well as a hold on the present. It is an appeal that goes far beyond the campus and implicates the whole nation. I cannot imagine that it will be ignored or dealt with meanly.

Claude Bissell

THE STAFF

The full-time staff establishment in 1964–65 was increased over the previous year by just over 100, and it is known at the time of writing this Report that the increase of 1965–66 over 1964–65 is almost exactly the same. In both years, about three-quarters of the total number of new appointments were made to the ranks of Instructor, Lecturer and Assistant Professor; but, as one would expect, the greatest number of non-renewals and resignations occurred in these same ranks. In both years, the largest number of promotions was from Assistant to Associate Professor. In 1964–65 there were almost as many direct appointments to Associate Professor and above as there were promotions; in 1965–66 the promotions outnumbered the new appointments. We seem, then, to be balancing the infusion of new blood and the recognition of long apprenticeship in reasonable proportions. But we cannot be complacent about the rate of increase. We cannot afford to forget that both the numbers of students and the level of instruction are rising; each year we take in the equivalent of a medium-sized graduate school, besides undergraduate increases. The total accessions to full-time staff in recent years have not improved the ratio of full-time staff to students, which is dangerously low for an institution with heavy commitments to honour, professional and graduate instruction.

The record of published articles and books that is included in the detailed Report to the Board of Governors

The University records with gratitude the names of those who gave great service

is evidence of the undiminished activity of the staff in scholarly pursuits. To the knowledgeable, the record is also an index of quality, for the distinction of a department is not unrelated to the scope and reputation of the journals its members write for. Without pretending to have achieved a uniform degree of excellence across the board, we can, I think, take satisfaction from the quality as well as the quantity of publication that is engendered in this University.

Three distinguished active members of staff died during the year. The loss of Professor J. A. Irving, for twenty years head of the Department of Ethics at Victoria College, will long be felt, not only in this University, where his gifts of teaching and lucid exposition and his warm personality endeared him to both colleagues and students, but also among his host of admirers outside the University. Dr. J. R. McArthur's death leaves a gap in the Department of Obstetrics and Gynaecology; his special skill and ability, coupled with a sincere interest in and devotion to his patients, were immediately recognized, and his outstanding surgical talents were widely appreciated both within and without Canada. Professor Myron Schaeffer's work in the field of electronic music was of international repute; through his premature death the Faculty has lost an enthusiastic exponent and experimenter in this field. On the non-academic side, the Museum suffered a severe loss in the sudden death of Mr. A. V. Tilbe, who had been Superintendent there for 32 years.

It is sad to record the deaths of several former colleagues whose contributions to the University were mentioned at the time they retired: Dr. W. E. Blatz, the dynamic professor of Psychology and founder of the Institute of Child Study; Professor A. S. P. Woodhouse, professor and head of the Department of English at University College, for many years the leading scholar in English studies in Canada; Professor S. K. Jaffary, eminent member of the School of Social Work; Professor W. L. Sagar, for 43 years on the staff of the Department of Civil Engineering; Professor J. R. Dymond of the Department of Zoology and the Royal Ontario Museum; Professor J. R. Cockburn who retired in 1950 as head of the Department of Engineering Drawing; Drs. Mitchell Kohan, Trevor Owen and A. A. Fletcher, distinguished members of the Department of Medicine; Dr. R. F. Farquharson, whose death is a loss to Canadian medicine as a whole; and Dr. C. A. Corrigan, retired professor and head of the Department of Orthodontics, who died at the age of 88.

We shall remember with special gratitude the outstanding services of several women of the staff who retired this year: Miss Bertha Bassam, after 36 years with the Library School as enterprising teacher and Director; Miss Zerada Slack, whose 20 years of double duty with the School of Physical and Health Education and with the Women's Athletic Association gave scope for her more than usual amount of energy and vigour; Miss Margaret Fletcher, after 38 wise and cheerful years in the Institute of Child Study; and Miss M. O'Connor, whose phenomenal 60 years in the Music Library established a record difficult indeed to match.

Among those retiring are Professor D. L. Bailey, a long-time member of the Department of Botany who was for 12 years Editor of the *Canadian Journal of Botany*; Professor Fulton Anderson, who retired as head of the Department of Philosophy in 1963 but continued on the staff as a Special Lecturer; and Professor Margaret Macdonald of the Department of French, University College, whose particular contribution has been her knowledge of French Canada. Retired from the Faculty of Medicine are Dr. D. E. Cannell, head of the Department of Obstetrics and Gynaecology, who has gone to the Ontario Cancer Treatment and Research Foundation as Executive Director; Dr. M. M. Hall, Radiology, Drs. Nelson Henderson and Leslie Watt, Obstetrics and Gynaecology, Dr. T. A. Crowther, Medicine, Dr. H. E. Edwards, Paediatrics, Drs. W. S. Keith and S. D. Gordon, Surgery, and Dr. M. I. Tom, who has run the Neuropathology Division almost single-handed for several years.

Three distinguished members of other professional faculties have retired: Professor C. W. Dillane, who gave long service to the Department of Civil Engineering; Professor R. C. Hosie, outstanding as teacher and counsellor in the Faculty of Forestry; and Dr. G. T. Mitton, who brought

Retirement has removed from the active list two of the most familiar figures on the campus

distinction to the work in Dental Public Health.

Finally, retirement has removed from the active list—though not, we hope, from our community—two of the most familiar figures on the campus. As Warden of Hart House for the past thirteen years, Mr. Joseph McCulley has guided the House with conspicuous success through a difficult period in its growth; he has contributed much to the University as a whole, and his genial countenance is, of course, well-known beyond our halls. If Dr. Healey Willan's face is less widely known, the back of his head has been familiar to graduating students and Convocation audiences for decades past, except for his last ceremony, when a power failure brought his talented performance to a premature stop. Dr. Willan taught in the Faculty and the Conservatory of Music for many years, and brought a unique influence to bear upon our musical tradition—an influence that has continued unabated since he retired as Professor of Music in 1950, as evidenced in the past year, for instance, by the Opera School's magnificent production of his opera *Deirdre* under Ettore Mazzoleni and Herman Geiger-Torel, and in the repertoire and the delicately polished style of choral performance that won international recognition for the University of Toronto Festival Chorus under Walter Barnes. Dr. Willan's creative gifts belong to the world; his humour and charm are the treasure of his colleagues and friends.

CLAUDE BISSELL

THE MUSEUM'S ROYAL VISITOR

On her private visit to Toronto last June, Queen Elizabeth the Queen Mother was welcomed to Royal Ontario Museum by President Claude Bissell, *above*, and the Chairman of the Museum Board, H. M. Turner, at extreme left *below*.

The Queen Mother's purpose in going to ROM was to examine some of the treasures and to see old friends, including Lionel Massey, the Associate Director who watched her sign the visitors' book *below*. This friendship began when Mr. Massey was Secretary to the Governor-General (his father, the Rt. Hon. Vincent Massey, C.H.). On July 28, a month and two days after these photographs were taken, the University was shocked and saddened by Lionel Massey's death from a heart ailment.

UNIVERSITY OF TORONTO

In higher education today the normal situation is one of rapid expansion and growth, and in that sense 1964–65 was a normal one at the University of Toronto. Enrolment figures, especially at the graduate levels, reached new all-time highs; expenditures, on both capital and operating account, also exceeded those of any previous year, as did Government grants received for operating purposes; academic fees were raised approximately 10%, to the highest level reached so far, and student financial aid also achieved a new peak; and a larger total of gifts and bequests came to the University than in any other year.

Within the financial statements five situations are out of the ordinary and call for particular comment:

1. As explained in the Auditors' notes to the financial statements (Note 7), a change in the time of payment of Provincial operating grants meant that grant instalments totalling $1,207,000 which we had expected to receive in our fiscal year 1964–65 were not received in that period and a current operating deficit was sustained as a result. It is hoped that corrective action will be taken to make up this $1,207,000.

2. The sinking fund payments for our outstanding 1969 and 1970 debentures are covered by special instalments of our annual Provincial grants, but one instalment of $275,000 due in August 1965 was actually received in May 1965 and the total received for sinking funds in the year ended June 30, 1965, therefore appears in the statements as $1,350,000 instead of the normal $1,075,000.

3. Annual Provincial capital grants were discontinued in 1964–65 and in their place arrangements were made for capital financing by debenture borrowing from The Ontario Universities Capital Aid Corporation. A total of $11,000,000 was obtained in this fashion in 1964–65 and special grants to

cover amortization payments are expected from the Provincial Government during the next thirty years.

4. In some previous years the Institute of Computer Science has been able to finance, from its earned revenues, the purchase of additional capital equipment to extend and improve its operations. In 1964–65 such payments have been shown in the expense statement as "appropriations to capital funds", in the amount of $187,658 rather than include them in "academic expenses" as in the past. (It is purely coincidental that this figure is identical with the amount shown as student aid, in both the income and expense sections of Statement 2.)

5. Parking fees were first introduced by the University in 1962–63 and the results of parking operations were included in the financial statements along with "Residences and ancillary departments", in the expectation that in due course the surface parking lots would be supplemented or replaced by parking garages. In the first two years of operation, the net revenue was $22,384 and $103,411. As from July 1, 1964, steps were taken to earmark all net parking income for the extension and improvement of parking facilities, and for this purpose the University of Toronto Parking Authority was established and parking operations since July 1, 1964, have been conducted through this Authority rather than through the University's regular operating accounts. In the year 1964–65 the net income accumulated in the Parking Authority was $112,885.

Two parking structures are now being designed. It is hoped that construction of at least one of these may be undertaken within the next year and that a succession of additional garages may follow, these to be self-financing, without assistance from the University's ordinary operating or capital funds.

Enrolment

Undergraduate growth is largely in the Faculty of Arts and Science. In graduate courses, where the most rapid increase is taking place, the emphasis

is on the "Humanities and Social Sciences" to a greater extent than the "Sciences".

Faculty or School	1964–65 Full-time Enrolment Total	Undergraduate	Graduate
Arts and Science (including Federated Arts Colleges)	8,960	7,662	1,298
Applied Science and Engineering	1,830	1,516	314
Architecture	266	228	38
Dentistry (incl. Dental Hygiene)	604	571	33
Law	338	328	10
Medicine (incl. Physical and Occupational Therapy)	1,607	1,158	449
Nursing	340	340	–
Pharmacy	397	386	11
Physical and Health Education	239	239	–
Other	804	335	469
	15,385	12,763	2,622
In addition to the full-time enrolment of students, there were on a part-time basis (not including the Ontario College of Education), making a total student population in the regular winter session of		15,385 4,497 19,882	

In the summer period the Campus is also a busy place. It is populated by several hundred teachers marking Grade XIII examinations in June and July each year and in the year 1964–65 the following summer students were enrolled – in addition to the large numbers of winter session graduate students continuing their work through the summer months:

Arts and Science–General Course	2,234
Medicine	13
Graduate Studies–other than O.C.E. and Library School	184
	2,431
Ontario College of Education and Library School	7,238
	9,669

Capital Expenditures

Further investment in land, buildings and equipment – exclusive of equipment purchased under research or similar grants or replacement equipment purchased with operating funds – totalled $19,679,748, which was substantially greater than the $8,252,576 spent in the previous year. In terms of specific buildings, the Ramsay Wright Zoological Laboratories, New College (Phase I), including residence accommodation for 291 men, and additions to the Superintendent's Building and the Aerospace Laboratories were completed and substantial progress was made on the new McLennan Laboratories for Physics,

Geophysics, Astronomy and Computer Science, and on Scarborough College (Phase I).

In 1957–58 the construction programme considered necessary to permit the projected expansion in enrolment was estimated at $60,432,000, to be completed by 1969. Present "unofficial" estimates extend to 1975 and include numerous projects not envisaged eight years ago – such as Scarborough and Erindale Colleges, a major expansion of medical teaching and research facilities, a large Humanities Research Library, facilities for Botany and the "Earth Sciences", a Planetarium and a series of self-financing parking garages. The total cost is likely to exceed $335,000,000–even without allowance for increases in building costs.

Current Operations

A short ten years ago the annual financial statements recorded total operating expenses of $11,401,469, of which $4,700,000 was covered by Provincial operating grants. In 1964–65 expenses reached $38,317,008, supported by Provincial grants of $17,129,994, and it appears likely that by 1966–67 the necessary annual increase in operating expenses will equal the total expenses of $11,400,000 in 1954–55.

Student fees, which had remained virtually unchanged since the two successive increases in 1959–60 and 1960–61, were again raised by approximately 10% in 1964–65. For University College – men – the 1964–65 Arts and Science fees, including compulsory incidentals, totalled $531. The corresponding fees in Engineering were $713 and Medicine $761.50. Graduate students were generally in a more favourable position at $475.

In the face of rising costs, residence fees were also increased slightly and while the elimination of a few non-essential services has helped the situation somewhat, it is doubtful that the line can be held very long even at present fee levels.

Scarborough and Erindale Colleges first appeared, in a small way, in the 1964 statements as a result of the acquisition of properties and the hiring of staffs to organize the academic and the physical programmes for the following years. In the present statements the activities of these Colleges are shown separately from those on the St. George Campus in order that they may be related to the specific Provincial financial assistance which they receive. At Scarborough a number of evening classes were held in 1964–65 in a local secondary school but no full-time students had yet been enrolled. No courses had yet been started at Erindale.

Student Financial Aid

Notwithstanding considerable progress in recent years in the exchange of information, there are still a good many scholarship, bursary and loan awards made directly to students by non-University persons or organizations, of which

the University's Office of Financial Aid has no record. The most recent and important of these are the "Canada Student Loans" provided by the Federal Government through the Provincial Government and the chartered banks. Loans totalling $2,977,683 to students of this University are known to have been authorized but the loans actually taken up are likely to have been somewhat less than this authorized total.

Omitting Canada Student Loans entirely, the following comparisons show the increase in financial aid in the three years from 1961–62 to 1964–65. The strong influence of Province of Ontario Graduate Fellowships is reflected in the sharp increases in the graduate figures, but aid at the undergraduate level fell off slightly, both in total and in average amount per student aided.

	1964–65			1961–62		
	Under-graduate	Graduate	Total	Under-graduate	Graduate	Total
Number of awards	5,738	1,128	6,866	5,578	666	6,244
Number of students aided	3,632	1,054	4,686	3,508	597	4,105
Value of aid	$1,624,888	1,227,868	2,852,756	1,739,896	571,809	2,311,705
Average per student aided	$ 447	1,165	609	495	957	563

Benefactions

In recent years the University has been the recipient of an increasing number of generous gifts and bequests, some of them very large indeed, which are a source of great encouragement and are of immense practical assistance.

Statement 5 includes the following items under the general heading "Benefactions":

Funds received in Trust, to be administered by the University, the income therefrom to be used for Student Aid, Research and sundry other purposes		$ 2,125,872
Funds received in Trust to be used for similar purposes, without necessary retention of any principal sum		7,871,406
Total Trust funds		$ 9,997,278
Funds received in reimbursement of research expenditures already made under terms of grants or agreements		1,109,042
Total—other than Capital funds		$11,106,320
Funds received for Capital purposes, including Sinking Fund grants—		
From Governments*	$3,485,895	
From other donors	733,560	4,219,455
		$15,325,775

*Not including $11,000,000 obtained by issue of debentures

The trend, over the past five years, has been toward better support of research, although several large bequests have also been received for student aid. There is pressing need for very much larger research grants and gifts, from all sources.

	(*Thousands of Dollars*)				
	1964–65	1963–64	1962–63	1961–62	1960–61
Trust Funds for Administration:— Endowment Principal					
Student Aid	2,014	1,652	629	322	485
Research	–	–	–	67	960
Other	112	16	2	10	16
	2,126	1,668	631	399	1,461
Expendable Funds					
Student Aid	750	869	698	692	526
Research	5,638	4,677	3,851	3,604	2,537
Other	1,483	1,179	1,859	708	608
	7,871	6,725	6,408	5,004	3,671
Reimbursement of Research expenditures under terms of grant or agreement	1,109	1,041	960	1,119	960
General Endowment— Unspecified funds to be used in the University's discretion	–	–	–	–	367
Total—other than Capital Funds	11,106	9,434	7,999	6,522	6,459
—For Student Aid	2,764	2,521	1,327	1,014	1,011
Research	6,747	5,718	4,811	4,790	4,457
Other purposes	1,595	1,195	1,861	718	991
	11,106	9,434	7,999	6,522	6,459

In addition to new "benefactions", the annual earnings from endowments held by the University and from some other endowments held elsewhere for our account are, of course, available for current use. Here again, research and student aid are the principal designated uses, as shown in Statement 4.

In acknowledging these very substantial gifts and bequests, which often make it possible to proceed with exploratory and imaginative projects beyond the scope of most public funds, particular thanks are extended to those donors who have allowed the University, in its discretion, to determine the use to be made of the funds provided.

FRANK R. STONE, *Vice-President (Administration)*

Statement 1 **University**

BALANCE SHEET

(with comparative figures

ASSETS

I Current Operating Funds

	June 30 1965	June 30 1964
Cash	$ 930,982	$ 549,075
Due from trust and endowment funds (per contra)	482,094	446,687
Due from capital funds (per contra)	360,182	344,302
Investments—note 2 (market value $1,402,654 in 1965 and $1,603,758 in 1964)	1,400,924	1,603,191
	$ 3,174,182	$ 2,943,255
Accounts receivable:		
Fees and residence dues	3,579	3,862
Due from related organizations	8,095	25,086
Other accounts receivable and recoverable expenditures	661,362	667,083
	$ 673,036	$ 696,031
Stores and supplies—approximately at cost	$ 247,717	$ 268,153
Prepaid and deferred expenses	$ 292,556	$ 198,607
	$ 4,387,491	$ 4,106,046

II Capital Funds

Cash	$ 9,192	$ 16,469
Special funds on deposit for capital purposes	$ 200,328	$ 2,187,204
Sales taxes recoverable on construction expenditures	$ 606,499	$ 279,200
Investments held for building programme purposes—note 2 (market value $6,381,769 in 1965 and $7,960,100 in 1964)	$ 6,315,782	$ 7,925,067
Land, buildings and equipment:		
St. George Campus—substantially at cost	$ 99,071,696	$ 85,413,817
Scarborough College site—at cost	740,227	708,574
Erindale College site—at cost	872,633	310,087
Construction in progress—at cost	14,758,644	9,330,974
Leased properties—at cost	585,359	585,359
	$116,028,559	$ 96,348,811
Discount on debentures—less amount written off	$ 522,769	$ 650,449
Cash and investments held for sinking funds:		
Cash	$ 4,117	$ 5,109
Investments—note 2 (market value $13,495,313 in 1965 and $11,661,113 in 1964)	13,818,389	11,862,357
	13,822,506	11,867,466
	$137,505,635	$119,274,666

JUNE 30, 1965

at June 30, 1964)

LIABILITIES

I Current Operating Funds

	June 30 1965	1964
Accounts payable and accrued charges	$ 2,256,825	$ 1,535,264
Due to related organizations	1,157,075	773,667
	$ 3,413,900	$ 2,308,931
Unearned income and fees paid in advance	$ 1,000,981	$ 688,278
Appropriation for the funding of supplementary pensions		168,000
Appropriation for major maintenance and renovations	352,940	490,534
Operating departments' reserves	98,406	73,653
Unexpended appropriations	191,508	249,625
Unexpended specific government grants	88,606	60,000
Net (deficit) or income carried forward (statement 2)	(758,850)	67,025
	$ 973,591	$ 1,797,115
	$ 4,387,491	$ 4,106,046

II Capital Funds

Due to current operating funds (per contra)	$ 360,182	$ 344,302
Construction accounts payable and holdbacks	3,777,335	1,823,389
Mortgages payable	17,260	6,500
3¼% debentures due April 15, 1969	11,500,000	11,500,000
3% debentures due August 15, 1970	7,500,000	7,500,000
5½% debentures issued to The Ontario Universities Capital Aid Corporation—(note 5)	11,000,000	
Total liabilities on capital account	$ 34,154,777	$ 21,174,191
Trust funds to be expended on building programme—statement 6:		
For general purposes	6,132,079	7,388,444
For specific purposes	3,356,906	2,675,195
General endowment in capital assets—statement 6	93,861,873	88,036,836
	$137,505,635	$119,274,666

BALANCE SHEET

(with comparative figures

ASSETS

III Trust and Endowment Funds

	June 30	
	1965	1964
Trust fund assets:		
Cash	$ 557,732	$ 615,031
Student loans receivable	265,086	265,175
Investments—note 2—		
Pooled investments held for endowed funds (market value $8,797,518 in 1965 and $8,464,912 in 1964)	9,258,866	8,954,228
Investments held for specific endowed funds	17,080,650	14,980,666
Pooled investments held for expendable funds less reserve of $90,000 in 1965 and $60,000 in 1964 (market value $8,675,231 in 1965 and $7,063,301 in 1964)	8,843,054	7,288,257
Investments held for specific expendable funds	2,997,980	2,922,490
	$39,003,368	$35,025,847
General endowment assets:		
Cash	$ 16,720	$ 4,288
Investments held for general endowment—note 2 (market value $1,700,143 in 1965 and $1,657,252 in 1964)	1,742,551	1,704,983
Loans to subsidiary organizations	524,000	574,000
	$ 2,283,271	$ 2,283,271
Assets held in safekeeping for related organizations and others:		
Cash	$ 13,333	$ 12,628
Investments	7,305,234	8,419,224
	$ 7,318,567	$ 8,431,852
	$48,605,206	$45,740,970

JUNE 30, 1965

at June 30, 1964)

LIABILITIES

III Trust and Endowment Funds

	June 30	
	1965	1964
Trust fund liabilities:		
Endowed faculty and departmental funds for specific operating purposes (including funds acting as endowments)—statement 4	$ 8,012,275	$ 8,012,515
Endowed funds for student awards, lectureships, research, etc.—statement 4	17,462,316	15,087,785
	$25,474,591	$23,100,300
Expendable funds, including income on endowed funds, available for student awards, lectureships, research, pension funds, etc.—statement 4	13,046,683	11,478,860
	$38,521,274	$34,579,160
Due to current operating funds (per contra)	482,094	446,687
	$39,003,368	$35,025,847
General endowment—statement 4	$ 2,283,271	$ 2,283,271
Liability for assets held in safekeeping	$ 7,318,567	$ 8,431,852
	$48,605,206	$45,740,970

AUDITOR'S REPORT

To the Governors of the

UNIVERSITY OF TORONTO:

We have examined the balance sheet of the University of Toronto as at June 30, 1965 and the statement of current operating income and expense and net deficit or income carried forward, summary of capital funds and summary of trust and endowment funds for the year ended on that date. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion the accompanying balance sheet, statement of current operating income and expense and net deficit or income carried forward, summary of capital funds and summary of trust and endowment funds, read in conjunction with the notes thereto, present fairly the financial position of the University as at June 30, 1965 and the results of its operations for the year ended on that date, in accordance, in all material respects, with generally accepted accounting principles appropriate for universities, applied on a basis consistent with that of the preceding year.

CLARKSON, GORDON & CO.
Chartered Accountants.

Toronto, Canada,
October 22, 1965.

NOTES

UNIVERSITY OF TORONTO: Notes to Financial Statements, year ended June 30, 1965:

1 The financial statements do not include the income or expense of the following related organizations, nor their assets and liabilities (except to the extent that the land and buildings used by certain of these organizations are included in the capital funds section of the balance sheet and securities owned by them are held for safekeeping), as the net assets and results of operations of these organizations are held to further the continuing activities of their respective operating areas:

Connaught Medical Research Laboratories
Hart House
Ontario College of Education
Royal Conservatory of Music of Toronto
Scientific Development Committee (including the Insulin Committee)
Students' Administrative Council
University of Toronto Athletic Association
University of Toronto Parking Authority (created as of July 1, 1964; net operating results of parking operations for the prior year in the amount of $103,411 are included in the 1964 figures on statement 2)
University of Toronto Press
University of Toronto Women's Athletic Association

2 Investments owned by the University are shown on the balance sheet at amortized cost plus accrued interest, with the following exceptions:

In the case of $428,227 of investments held in an investment pool for building programme purposes, which were formerly held specifically for certain of the building trust funds, cost is taken as market value at June 30, 1958, the date at which these investments were pooled.

When investments held for endowed and pooled expendable trust funds are sold to permit re-investment in other approved securities, cost of the securities purchased is deemed to include the difference between book value and selling price of the securities sold. This difference is amortized according to the maturity dates of the securities sold.

Certain investments held for specific trusts are shown at amortized cost or values assigned at acquisition.

Investments held for sinking fund include $3,670,000 par value of University of Toronto debentures.

3 In accordance with the University's normal practice, the statement of current operating income and expense does not include a charge for depreciation of capital assets, but it does include charges of $1,734,300 for additional or replacement equipment. The cost of acquisition of new properties and of construction and initial equipping of new or rehabilitated buildings (which amounted to $19,679,748 in 1965 and $8,252,576 in 1964) has been added to fixed asset accounts under capital fund assets.

4 The estimated cost to complete land acquisitions in process and to complete buildings under construction at June 30, 1965 or started prior to September 28, 1965, including commitments for equipment and possible additional contract costs, is $16,650,000.

5 30 year debentures were issued during the year ended June 30, 1965 to The Ontario Universities Capital Aid Corporation to finance capital expenditures as follows:

St. George Campus	$ 6,000,000
Scarborough College	5,000,000
	$11,000,000

These debentures are payable in equal annual instalments of principal and interest and mature in 1994 and 1995. It is expected that the Ontario Department of University Affairs will make grants equal to the annual payments of debenture principal and interest as they become due. Accordingly interest expense will be recorded in the accounts on a cash basis to correspond with the expected grant income. Interest accrued on these debentures but not recorded in the accounts at June 30, 1965 amounted to $238,986.

6 Comparative figures for the 1964 year have been adapted in certain instances to conform with the classification of accounts used in 1965.

7 Provincial Government operating grant instalment payments totalling $1,207,000 expected to be received in the period April 1 to June 30, 1965 were not made because of a change in Provincial policy in relation to the time of payment of such grants. The Governors hope that in due course the amount involved will be covered by an additional Provincial grant but, for the year ended June 30, 1965 instead of a net income of $381,125 being carried forward, the change in policy results in a net expense of $825,875.

STATEMENT OF CURRENT OPERATING INCOME

YEAR ENDED

(with comparative figures for

INCOME (000s omitted)

	Year ended June 30, 1965					Year ended June 30, 1964	
	St. George Campus $	Scarborough College $	Erindale College $	Total $	%	$	%
Student fees	6,976	29		7,005	18.7	5,783	17.7
Endowment income from:							
—general endowment	94			94	1.2	91	1.4
—endowed trust funds for specific purposes	374			374		368	
Government grants for specific operating purposes	117			117	0.6	142	0.8
Gifts for specific operating purposes	88			88		116	
Interest and rentals	377			377	1.0	293	0.9
Miscellaneous	170			170	0.5	196	0.6
Residences and other ancillary departments	968			968	2.6	888	2.7
Revenues from services to outside organizations	948			948	2.5	821	2.5
	10,112	29		10,141	27.1	8,698	26.6
Government grants for general operating purposes—							
Federal University grants	3,718			3,718	9.9	3,720	11.4
Province of Ontario grants for:							
Ordinary purposes	14,966	288	12	15,266	40.7	13,557	41.4
Graduate programme	1,500			1,500	4.0	1,252	3.8
Student assistance	188			188	0.5		
Libraries		85	91	176	0.5	100	0.3
	30,484	402	103	30,989	82.7	27,327	83.5
Grants and gifts for assisted research	6,502			6,502	17.3	5,395	16.5
	36,986	402	103	37,491	100.0	32,722	100.0

AND EXPENSE AND INCOME CARRIED FORWARD

JUNE 30, 1965

the year ended June 30, 1964)

EXPENSES (000s omitted)

	Year ended June 30, 1965					Year ended June 30, 1964	
	St. George Campus $	Scarborough College $	Erindale College $	Total $	%	$	%
Academic—Statement 3	21,930	332	91	22,353	58.3	18,998	57.9
General administration	1,115	31		1,146	3.0	968	3.0
Operation and maintenance of physical plant	3,504	16	12	3,532	9.2	3,098	9.4
Information, publications, Alumni affairs, etc.	363			363	1.0	343	1.0
Student assistance	188			188	0.5	167	0.5
Miscellaneous	362			362	1.0	403	1.2
Residences and other ancillary departments (including building costs)	1,007			1,007	2.6	810	2.5
Total University operating expense	28,469	379	103	28,951	75.6	24,787	75.5
Interest on 1969 debentures	402			402	1.7	402	2.0
Interest and discount on 1970 debentures	236			236		236	
Provision for funding of supplementary pensions	518			518	1.3	518	1.6
Provision for major maintenance and renovations	300			300	0.8	200	0.6
Appropriation to capital funds for improvements in computer facilities financed from related specific revenues	188			188	0.5	150	0.5
Royal Ontario Museum (including building expense, less direct income)	1,220			1,220	3.1	1,121	3.4
	31,333	379	103	31,815	83.0	27,414	83.6
Assisted research	6,502			6,502	17.0	5,395	16.4
	37,835	379	103	38,317	100.0	32,809	100.0
Net (expense) income for the year	(849)	23		(826)		(87)	
Net income carried forward from prior year	67			67		154	
Net (deficit) or income carried forward	(782)	23		(759)		67	

ACADEMIC

YEAR ENDED

(with comparative total figures

	Salaries and wages	Pension costs	Equipment and apparatus
St. George Campus:			
University College	$ 1,021,626	$ 43,943	$ 6,065
New College	79,510	2,132	524
Innis College	41,331	670	1,081
Faculty of Arts and Science	6,000,546	183,580	399,537
Faculty of Applied Science and Engineering	2,010,002	72,511	70,990
School of Architecture	306,824	15,078	2,333
School of Business	184,383	8,481	2,574
Institute of Child Study	197,047	11,733	8,881
Faculty of Dentistry	992,288	35,935	16,744
Faculty of Food Sciences	184,655	10,770	5,766
Faculty of Forestry	162,450	8,334	6,861
School of Graduate Studies	129,298	4,645	3,086
School of Hygiene	468,238	27,245	5,525
Faculty of Law	252,712	9,792	26,282
Faculty of Medicine	2,043,145	85,284	92,157
Faculty of Music	291,778	8,643	12,948
School of Nursing	211,343	10,138	1,170
Faculty of Pharmacy	211,925	9,694	15,079
School of Physical and Health Education	74,395	441	442
School of Social Work	271,508	16,334	2,402
Division of University Extension	636,778	7,154	1,636
Department of Athletics and Physical Education—			
Men	64,930	5,855	877
Women	85,761	4,129	1,044
Library	1,328,312	33,509	743,106
Banting and Best Department of Medical Research	271,229	16,389	14,061
Institute of Computer Science	131,945	2,429	4,947
Other institutes and centres	83,600	5,661	820
University Research			
Moving expenses—new academic staff			
Travelling expenses—academic staff			
Examination supplies			
	$17,737,559	$640,509	$1,446,938
Scarborough College	223,160	4,693	98,084
Erindale College			90,667
Total academic expenses	$17,960,719	$645,202	$1,635,689

EXPENSE

JUNE 30, 1965

for the year ended June 30, 1964)

Materials and supplies	Miscellaneous and general	Total expenses	Comparative 1964 total expenses	Assisted research expenditures	
				Year ended June 30, 1965	Year ended June 30, 1964
$ 5,726	$ 14,128	$ 1,091,488	$ 931,751		
1,787	1,912	85,865	59,453		
1,798	2,775	47,655	1,705		
310,687	33,871	6,928,221	5,771,470	$1,872,693	$1,593,827
138,314	46,773	2,338,590	2,077,684	1,009,152	895,975
9,986	3,534	337,755	300,176	9,821	12,160
5,370	16,978	217,786	187,634	2,023	44
7,194	3,417	228,272	216,910	73,098	61,479
100,967	74,720	1,220,654	1,164,860	140,812	116,688
7,682		208,873	185,184	7,595	8,620
8,015	16,352	202,012	185,681	33,143	26,121
22,730	122,634	282,393	201,016		236,620
24,751	3,165	528,924	471,601	360,107	
5,383	4,468	298,637	269,189		
123,270	44,126	2,387,982	2,095,082	2,553,836	2,092,355
11,307	66,146	390,822	349,327		
3,465	2,014	228,130	199,199	8,370	10,656
30,122	4,568	271,388	243,698	36,876	17,927
2,413	8,172	85,863	81,916	41	4,179
9,052	10,000	309,296	285,157	133,429	97,976
7,364	112,753	765,685	690,739		
3,252	30,850	105,764	90,358		
2,825		93,759	82,773		
76,540	24,872	2,206,339	1,837,588		
50,815	15,580	368,074	363,887	257,223	219,701
26,133	68,130	233,584	191,318	4,150	
1,720	566	92,367	37,050		
	230,400	230,400	205,400		
	61,408	61,408	64,865		
	70,161	70,161	41,904		
	12,608	12,608	13,384		
$ 998,668	$1,107,081	$21,930,755	$18,897,959	$6,502,369	$5,394,328
4,096	1,884	331,917	50,000		
		90,667	50,000		
$1,002,764	$1,108,965	$22,353,339	$18,997,959	$6,502,369	$5,394,328

SUMMARY OF TRUST

YEAR ENDED

	Endowed Funds			
	Balance June 30, 1964	Bene-factions	Net transfers and other additions and (deletions)	Balance June 30, 1965
Trust Funds				
Scholarships, fellowships, prizes, bursaries, loan and composite funds—				
Endowed funds	$ 5,834,030	$2,013,954	$ 45,606	$ 7,893,590
Non-endowed funds				
Lectureships—				
Endowed funds	163,230			163,230
Non-endowed funds				
Departmental funds—				
Endowed funds	1,605,147	111,918	203,053	1,920,118
Non-endowed funds				
Research funds—				
Endowed funds	7,208,230			7,208,230
Non-endowed funds				
Miscellaneous funds—				
Endowed funds	277,148			277,148
Non-endowed funds				
Pension funds—				
Non-endowed funds				
Subtotals—endowed funds	15,087,785	2,125,872	248,659	17,462,316
—non-endowed funds				
Faculty and departmental endowments	8,012,515		(240)	8,012,275
Totals—				
Endowed funds	23,100,300	2,125,872	248,419	25,474,591
Non-endowed funds				
	$23,100,300	$2,125,872	$248,419	$25,474,591
General Endowment	$ 2,283,271			$ 2,283,271

AND ENDOWMENT FUNDS

JUNE 30, 1965

Expendable Funds

Balance June 30, 1964	Benefactions	Income earned during the year	Net transfers and other additions and (deletions)	Disbursements	Balance June 30, 1965
$ 380,649	$ 76,449	$ 304,445	$ (45,337)	$ 140,235	$ 575,971
1,381,770	672,587	26,266	52,596	724,050	1,409,169
19,428		4,104	4,996	5,993	22,535
12,605	550	43		1,634	11,564
135,068	7,371	94,317	(115,406)	7,955	113,395
3,325,610	1,014,331	93,931	520,851	1,789,730	3,164,993
127,491		329,700	(81,743)	232,494	142,954
3,342,969	5,638,272	31,568	63,085	5,393,151	3,682,743
3,181		10,312	(5,095)	5,095	3,303
1,023,897	461,846	52,656	105,083	148,193	1,495,289
1,512,698		74,699	686,000	49,660	2,223,737
665,817	83,820	742,878	(242,585)	391,772	858,158
10,599,549	7,787,586	279,163	1,427,615	8,106,418	11,987,495
213,494		358,624	(370,059)	1,029	201,030
879,311	83,820	1,101,502	(612,644)	392,801	1,059,188
10,599,549	7,787,586	279,163	1,427,615	8,106,418	11,987,495
$11,478,860	$7,871,406	$1,380,665	$ 814,971	$8,499,219	$13,046,683

Supplementary to audited statement but *not* a part thereof.

SUMMARY OF BENEFACTIONS AND
YEAR ENDED

SOURCE OF

	Government			Corporations and Industry
	Federal	Provincial	Municipal	
Scholarships, Fellowships, and Prizes				
—Endowment Funds	..	..	..	..
—Expendable Funds	$ 24,884	$ 3,275	$ 1,215	$221,082
Bursaries—				
—Endowment Funds	..	..	..	..
—Expendable Funds	..	..	..	15,238
Loan Funds—				
—Endowment Funds	..	..	..	..
—Expendable Funds	..	..	..	..
Composite Funds—				
—Endowment Funds	..	..	..	..
—Expendable Funds	..	..	..	..
Lectureships—				
—Endowment Funds	..	..	..	..
—Expendable Funds	..	..	..	500
Departmental Funds—				
—Endowment Funds	..	..	..	..
—Expendable Funds	68,839	299,501	..	65,813
Research Funds—				
—Endowment Funds	..	..	..	..
—Expendable Funds	4,458,316	180,882	..	287,050
Miscellaneous Funds				
—Endowment Funds	..	..	..	..
—Expendable Funds	..	..	..	15,000
Sinking Funds—				
—Expendable Funds	..	1,350,000	..	..
Building Funds—				
—Endowment Funds	..	..	..	..
—Expendable Funds	1,395,895	500,000	240,000	16,500
Total Endowment Funds	..	..	..	..
Total Expendable Funds	$5,947,934	$2,333,658	$241,215	$621,183

GOVERNMENT CAPITAL GRANTS
JUNE 30, 1965

Supplementary to audited statement but *not* a part thereof.

FUNDS

Associations and Foundations	Individuals and Estates	Joint Funds	Other	TOTAL Endowment Funds	TOTAL Expendable Funds
$ 8,991	$1,021,740	..	..	$1,030,731	..
137,785	103,219	$ 4,100	$ 51,847	..	$ 547,407
100	2,550	4,183	260	7,093	..
67,049	26,020	7,500	12,720	..	128,527
..	10	3,217	..	3,227	..
4,000	1,292	4,355	130	..	9,777
..	972,903	..	..	972,903	..
16,250	47,076	..	..	..	63,326
..	..	..	..	..	..
..	50	..	..	..	550
..	111,918	..	..	111,918	..
236,255	85,649	250,012	15,632	..	1,021,701
..	..	..	..	..	..
1,020,230	132,117	5,911	662,808	..	6,747,314
..	..	..	..	..	..
61,377	385,468	..	..	..	461,845
..	..	..	..	..	1,350,000
..	..	..	..	..	..
350,594	..	366,466	..	..	2,869,455
$ 9,091	$2,109,121	$ 7,400	$ 260	$2,125,872	..
$1,893,540	$ 780,891	$638,344	$743,137	..	$13,199,902
				Total Benefactions	$15,325,774

SUMMARY OF

YEAR ENDED

Trust Funds To Be Expended on Building Programme

	Trust funds for general programme	Trust funds for specific programme	Total
Balance of funds June 30, 1964	$7,388,444	$2,675,195	$10,063,639
Add:			
University's share of distributions from the National Fund for the University of Toronto	297,000		297,000
Grants and payments on account of grants—			
Canada Council grants for New College and University College Library		850,000	850,000
National Research Council grants for:			
Computer		3,375	
Linear Accelerator		500,000	
Institute of Aerospace Studies		4,000	507,375
Metropolitan Toronto grant for School of Business and School of Social Work		240,000	240,000
Province of Ontario grant for temporary accommodation		500,000	500,000
Ford Foundation grant for Metallurgy		350,594	350,594
Other benefactions	2,000	122,486	124,486
	299,000	2,570,455	2,869,455
Income from capital funds investments	220,326	107,898	328,224
E. C. Whitney Bequest		33,933	33,933
Appropriation from specific current operating revenue for computer facilities		187,658	187,658
Funds available through amortization against operating income of discount on 1970 debentures	10,714		10,714
	530,040	2,899,944	3,429,984
	7,918,484	5,575,139	13,493,623
Transfers to trust accounts of excess of funds previously transferred for Faculty of Music—			
Orchestra lift		(3,031)	(3,031)
Piano purchase		(3,931	(3,931)
Transfer of proceeds from sale of 23 Scott Street to general building funds	110,484	(110,484)	
Transfer to general endowment in capital assets in respect of trust funds and grants applied against construction of buildings and purchase of properties and equipment during the year	(1,896,889)	(2,100,787)	(3,997,676)
	(1,786,405)	(2,218,233)	(4,004,638)
Balance of funds June 30, 1965	$6,132,079	$3,356,906	$9,448,985

CAPITAL FUNDS

JUNE 30, 1965

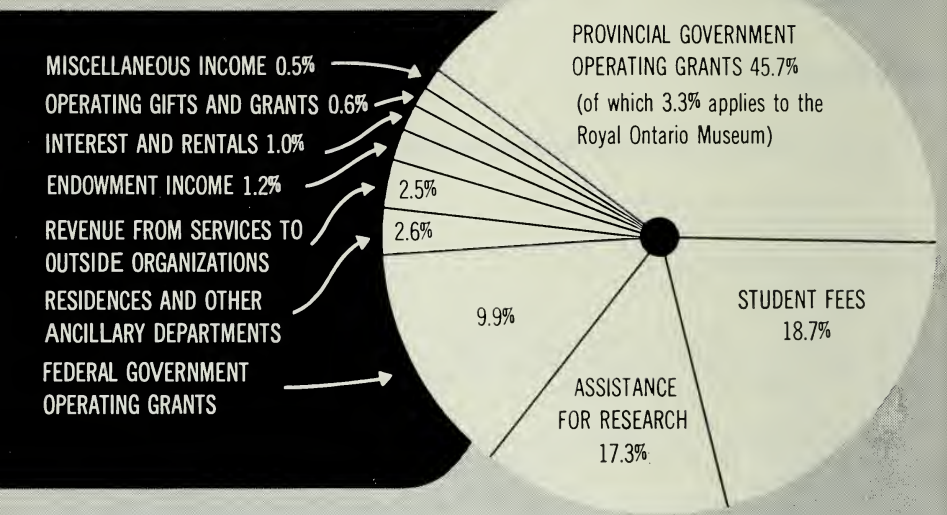
General Endowment in Capital Assets

Balance June 30, 1964			$88,036,836
Add:			
Trust funds and grants applied against construction of buildings and purchase of properties and equipment during the year			3,997,676
Additions to endowment resulting from provisions for sinking funds for retirement of debentures—			
	Debentures maturing in		
	1970	1969	
Provincial grants received (note)	$550,000	$ 800,000	
Interest on sinking fund investments	261,591	343,449	
	811,591	1,143,449	
Less amortization of discount on debentures	10,714	116,965	
	$800,877	$1,026,484	1,827,361
Balance June 30, 1965			$93,861,873

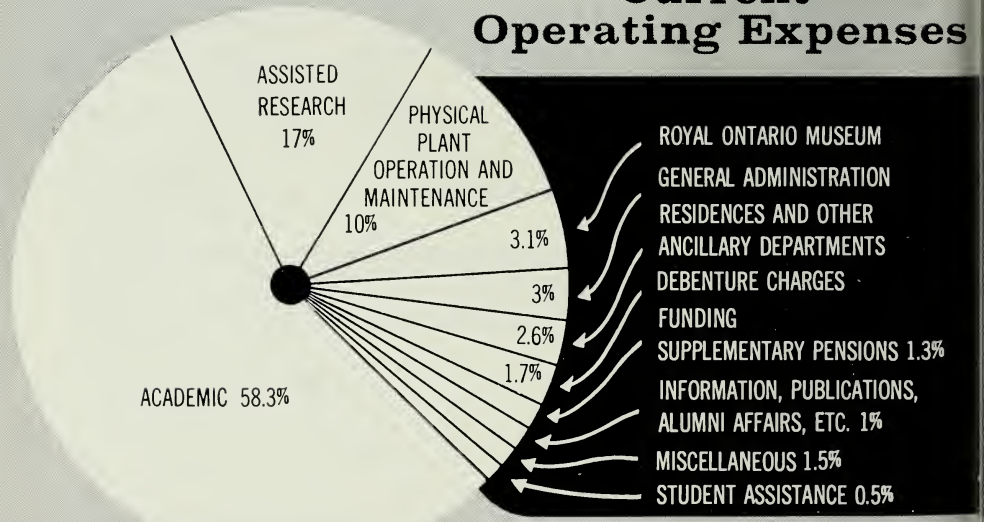
Note: The Provincial grant received on account of debentures maturing in 1970 represents sinking fund instalments due August 15, 1964 and August 15, 1965.

UNIVERSITY OF TORONTO

Current Operating Income 1964-65



Current Operating Expenses



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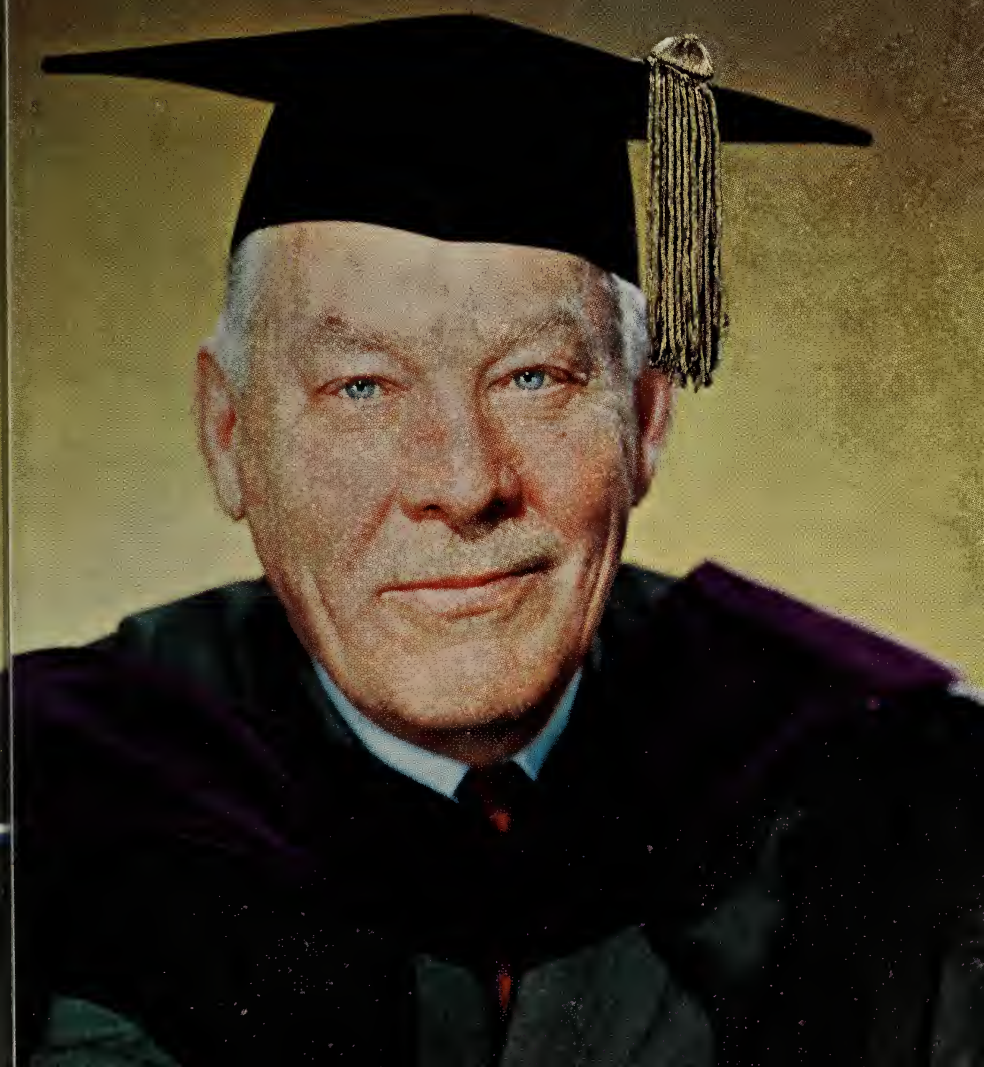
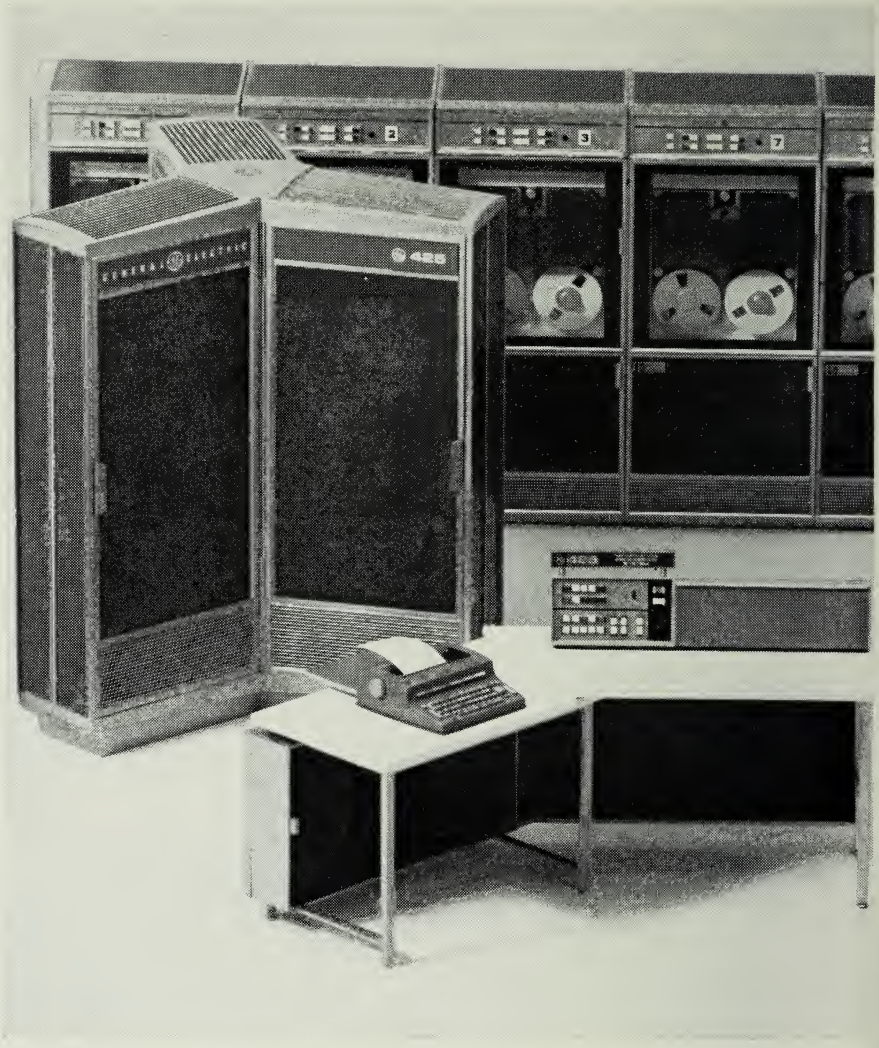
ARSITY

GRADUATE

NIVERSITY OF TORONTO SPRING 1966





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CANADIAN GENERAL ELECTRIC

VARSITY
GRADUATE

Volume Twelve **Number Three**

April 1966

THE COVER (by Ken Bell of Art Associates Limited): Henry Borden, C.M.G., Q.C., B.A., LL.D., D.C.L., has been Chairman of the University of Toronto Board of Governors since March, 1964. Before this appointment he served as Vice-Chairman for 19 years.

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Starting on page 27, Bob Lansdale and his camera present Dean Hamilton (above), the associate deans and department heads in the Faculty of Medicine. Dr. A. L. Chute, paediatrics, and Dr. P. H. Greey, bacteriology—both away on leave—will be photographed for a future issue.

VARSITY GRADUATE is published four times each academic year by the Department of Information, Simcoe Hall, University of Toronto, Toronto 5. Printed at the University of Toronto Press. Authorized as second class mail, Post Office Department, Ottawa, Canada and for payment of postage in cash. Subscription price $2 a year, $5 for three years.

The Editor of VARSITY GRADUATE is Kenneth S. Edey, director of the University's Department of Information. The other members of the department are Lawrence F. Jones, assistant director; Leonard Bertin, science editor; Crawford Grier, humanities and social sciences; Mrs. Winogene Ferguson, information officer, and Mrs. Doreen McMeeken, production supervisor.

Other periodicals published by the Department of Information are VARSITY NEWS, in October, December, March and May for graduates and former students; and STAFF BULLETIN, monthly from October to March.

Requests for rate cards and other information about advertising should be addressed to Mrs. Jean Balint, VARSITY GRADUATE's advertising representative, at Department of Information, Simcoe Hall, University of Toronto, Toronto 5, Telephone 928-2105.

The President of Cornell, in an address to Convocation, discusses the various pressures upon the academic community

The Integrity of the University Community

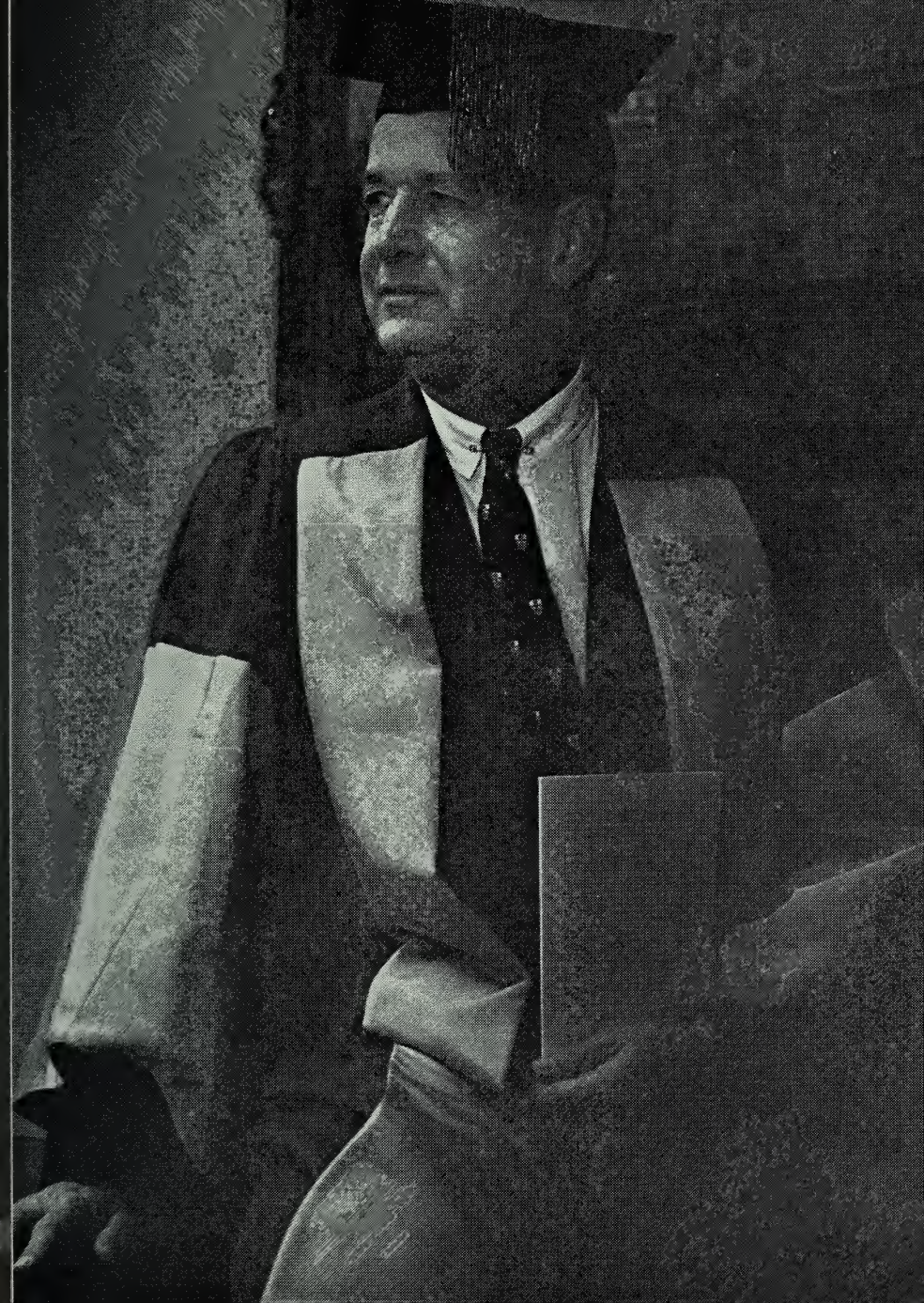
James A. Perkins

Sir Eric Ashby, Master of Clare College in Cambridge, is certainly one of the great spokesmen for higher education throughout the world. In 1962, he delivered an address at the University of Witwatersrand entitled "Universities under Siege." Of course, he was speaking about the universities that were under the pressure to bow to the dreadful doctrine of apartheid, that great social perversion of the Republic of South Africa. He was there to encourage them in their fight for intellectual freedom and human decency.

But most universities have been "under siege" at some time in their history and have felt the pressure of intemperate opposition. Oxford and Cambridge felt the lash of royal displeasure as far back as 1535; the German universities were set back a generation by Adolf Hitler; the University of Buenos Aires was almost ruined by Peron; and in my country we remember the rise of McCarthy with shame and anger.

Such pressure can be expected and sometimes it will win temporary success, at least in times of great political

Dr. Perkins, President of Cornell University, sat for his portrait (*facing page*) shortly before receiving the degree of Doctor of Laws from the Chancellor, Dr. Omond Solandt, at the U of T Fall Convocation. The accompanying article was taken from his address on that occasion.



upheaval. Adverse pressure can be expected because universities are the dynamos of change as well as the transmitters of custom. They are both creator and critic and the critic's lot is not a happy one. It is really a sign of the importance of the university that those who would try to control the minds of men would find the freedom of the university a constant danger. But free men trust the free mind and will protect the freedom of the university.

And this is precisely why the universities must always be on the side of a free society because they must always support the conditions of their own freedom, indeed of their own survival. It is also why they must continue to operate at the highest level of excellence so that society will continue to grant them the freedom that is their *raison d'être.*

External threats to the university community will continue in one form or another because the university is bound to seem dangerous to someone sometime. Although these alarms and excursions will continue in the United States and Canada, our freedom and stability suggest they may well involve a far lower level of violence. That university freedom is respected or at least seems beyond successful attack is suggested by the appearance of a more sophisticated form of external pressure on the university community.

This more sophisticated stance accepts the right of the opposed view but wishes to insert its own position

Leadership . . . at home and abroad

THE URGE TO VISIT TORONTO is imbedded in Cornell history [*said Dr. Perkins, beginning his address to Convocation*]. One of our most distinguished early professors, Goldwin Smith, came to live in Toronto after his retirement and became a substantial figure in university affairs. I am told that he helped to write the report of 1906 on which the structure of your university is still based. And, of course, we are insufferably proud that your President Claude Bissell received his doctorate at Cornell in 1940.

The thermal draft of public interest in higher education has carried Toronto to new heights of importance. Toronto continues to maintain its high standards of educational leadership both here and abroad. But the high esteem in which this university is held is, in equal measure, due to the great leadership exercised by Toronto's presidents. I pay my respects to President Bissell as a fellow Trustee of the Carnegie Foundation for the Advancement of Teaching and fellow member of the Association of American Universities. Like former president Sidney Earle Smith his vision and judgment are respected throughout the university world.

Right: Hugh MacLennan, "eloquent and sensitive chronicler of our times", who is seen here with the President, became an honorary Doctor of Laws at the Fall Convocation. Presenting him to the Chancellor for his degree, Dr. Bissell ended the citation with these words:

"As a Scotsman, a Nova Scotian and a Presbyterian, he is not averse to didactic exhortation, and his voice has been raised from the public platform and in numerous essays against intolerance, bigotry and brutality. But the denunciation is made with a Celtic lilt and the moral earnestness often dissolves in playful self-criticism.

" 'The Scots', he has observed, 'would have been murdered long ago if the rest of the world didn't think them absurd. The Presbyterians would all have committed suicide if some latent sense of humour had not survived their original ideal with John Knox and Jehovah' ".

nto the university community. Such an interest is dictated by the notion that the university should represent all points of view including that of our sophisticated social termite who would lay his intellectual eggs, whether colored communist red or Birchite blue, in the university nest. If you can't lick 'em—join 'em—is the strategy and equal time on the university network is the rationale.

But the university is not a television network. Nor is it supposed to reflect with any degree of accuracy the opinions of the world around it. Those who advance such beliefs misunderstand the nature of the university community and would destroy it by insisting that it mirror political or social points of view as a matter of educational policy. Who would determine the success or failure of any such program? Who would review the lectures and speeches to assure that balance would exist in fact as well as theory? Clearly the idea is inoperable.

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The university is not really concerned with faculty points of view; it is in the business of adding to knowledge, transmitting the results and showing the world how to use what it has discovered and what its students have learned.

Coverage is always incomplete. Its physics department may concentrate on low energy or high energy physics; its philosophers may be logical positivists or absolute idealists; and its political scientists — behaviorists or traditionalists. When it concerns itself with balance, it must do so in response to internal intellectual necessities, not because some outside interest feels neglected.

Furthermore, the university community is very sensitive to whose voice is raised to argue for balance. Those who have earned the right to be heard by reason of their professional accomplishment and known sensitivity to the delicate nuances of the university affairs will be listened to and their views carefully considered. But those who argue for balance without these keys to the community door will find themselves suspect and their ideas rejected. There is more than a verbal difference in a suggestion from the Ford Foundation and one from the Ford Motor Company. The former is staffed with fellow professionals and that makes all the difference — believe me!

But these external threats, whether traditional or modern in form, are not really the most powerful forces that are affecting the university community. It is not external forces but rather

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internal ones that are today determining the future shape and even existence of the university community. There are many internal forces that are reshaping this community: I would like to review one of them — the changing role and mission of the faculty in the university.

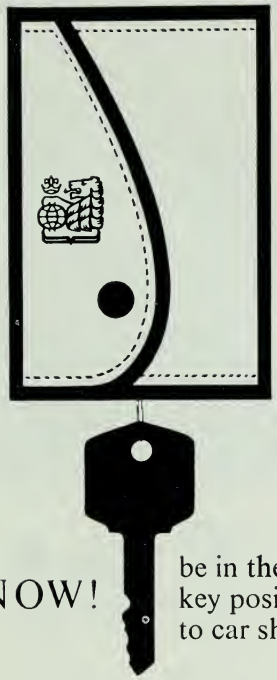
The idea of the faculty is, frankly, out of focus. As a result, the important new role and mission of faculty members in modern society is not fully appreciated. And, furthermore, the nature of faculty responsibility within the university community is not understood frequently.

The explosion of knowledge and the involvement of the university in society have changed the whole stance of the faculty both within the university and in the world at large. Once viewed as impractical idealists, they and their ideas are today the great energy source for public and private enterprise and increasingly for the world of the humanities and the arts. Once viewed as a chummy Chips tapping a pipe at his study fireplace, the professor is now managing a large laboratory or a team of demographers in Jamaica. Once a member of a community of scholars who could collectively manage the university through a clerk from four to six in the afternoon (and not every afternoon at that!), he must now work out new relationships to a staff of full-time administrators who, generally speaking, have a better grasp of university business than he.

The explosion of knowledge has made specialists out of generalists and the world-view and even the university-view of the specialists is, of necessity, a partial view. The mastery of a particular field of knowledge has led to increased power and influence in his discipline and in the profession that needs the discipline. But it has thrown up all kinds of barriers to faculty communication within the university community. Just look at a classroom blackboard after a professor of physics or sociology has finished a demonstration. You won't understand the symbols of the first or the jargon of the second and they, needless to say, may not understand each other!

However, even though specialization and the outward thrust of faculty interest has enormously modified and restricted the faculty role of direct managers of the university, their interest and point of view is decisive to the health, the vitality and the progress of the university. There are more ways to exert influence in this world than making the decision yourself. You can influence the decision maker. Look at the way our wives handle their husbands.

There are at least four areas where the faculty, as faculty, can and must exercise a constant influence. Even though specialization is the order of the day and the condition of progress, it is equally true that some of the great advances in knowledge have come through the fusing of ideas from separate and specialized disciplines. Modern biology would be unthinkable without the crossbreeding with chemistry; space research impossible without the interaction of astronomy, physics



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and engineering; and behavioral research barren without the inputs of social psychology, neurology and even mathematics. The continued exploration of ways to advance knowledge by the marriage of specialties should be one of the decisive preoccupations of a faculty. The unity of knowledge and the community of scholars may be idealistic notions. But they are indispensible notions as the basis of further efforts to generate new syntheses and new approaches to old problems.

A second area of influence has to do with academic policy and intellectual standards. Even though a specialist will find general education matters difficult to design, the faculty member has a sound instinct for what makes educational sense. And there are many members of the faculty who are more than specialists — they have a lively interest in broad institutional matters. The real specialists stay away from faculty meetings and faculty committees in droves. Their institutional heart-beat can only be discovered with the most sensitive stethoscope. But there are many excellent scholars who can really represent broad faculty interests and faculty points of view and they exert both an initiating and an approving voice that shapes the style of the university community.

The point I would make, however, is that academic policy and intellectual standards in general require the faculty to sit in judgment on proposals that will be developed by a combination of administratively minded faculty and faculty-oriented administrators. This role is decisive to the community and it must not be diluted by frittering away time on administrative detail. The faculty should increasingly organize itself to react to general policy matters, assure itself that specific measures are consonant with such policies, and then spend their main energies on advancing their own fields of knowledge, on the instruction of students, and on rendering service to their society.

There is a third area of faculty influence that hardly needs elaboration — namely, the protection of academic freedom. This has been a traditional faculty concern and properly so. Threats to this freedom will quickly fill up a faculty meeting — and this is as it should be. A point needs to be made however, and that is the enormous support to academic freedom that comes from our modern university structure. The lay board of trustees acts as a tough shield to protect this community from public depredations. After all, the trustee can claim that he represents the public interest. And don't ever forget the president and his colleagues are the first to hear complaints about faculty and are the target for suggestions for inserting points of view of some minority group. The combination of board, administration and faculty provides a tough defence — but the vigilance of the faculty is still decisive.

One codicil to this statement is in order. The influence of an organized alumni body when the integrity of

(*Continued on Page 124*)

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Harvard, Varsity stand 1st & 3rd twice in '66

While varsity athletes were winning well merited public acclaim, less dramatic but more important to the intellectual health of the University was the success of its undergraduate students in more restrained yet equally arduous competitions.

Twice in recent weeks the University of Toronto has placed high in contests of academic ability—the Woodrow Wilson National Foundation Fellowships and the William Putnam Lowell Mathematical Competition.

In the maths competition, the University of Toronto team of three placed third in North America, with only Harvard and the Massachusetts Institute of Technology ahead. (Professor H. S. M. Coxeter tells the story of the Putnam awards in an article beginning on Page 15.)

Varsity ranked third among 380 Canadian and United States universities and colleges in the number of Woodrow Wilson Fellowships awarded this year. Again Harvard led, with 49 Fellowships, and the University of Michigan was second with 39. Varsity was awarded 27.

The University of Toronto contributed 35 per cent of the Fellowship winners from Canadian universities. In second place was the University of British Columbia with 11 winners. McGill and Manitoba

were third, with eight each, and Queen's was fourth with six Fellows.

Four came from University of Victoria, three each from Carleton, McMaster and United College, two each: Acadia, Alberta at Calgary, Alberta at Edmonton, Loyola, Saskatchewan, Sir George Williams and Western Ontario; one each: Dalhousie, Laval, Montreal, New Brunswick, Ottawa, St. Francis Xavier, Waterloo Lutheran, University of Waterloo, Windsor.

Said Sir Hugh Taylor, President of the Woodrow Wilson National Fellowship Foundation: "These able young men and women represent the best in Canadian undergraduate scholarship. When they have completed their graduate studies, we expect to find them teaching in Canadian university class rooms."

Many have done just that, and a goodly number who won their Fellowships as undergraduate students at U of T returned to teach here after completing their graduate work. Several hold profesorial positions and others, winners in more recent years, are lecturers or teaching fellows.

Among those on the University of Toronto staff are Professors T. H. Charlton, Stephen Clarkson, Bert Forrin, Charles Hanley, David Gauthier, Donald F. Forster, C. K. Helleiner and Kenneth Wyman.

Two members of the Maniates family in Toronto have won Woodrow Wilson Fellowships. One of this year's winners is Julia Maniates, student in honours English at University College. Her sister Mary, who won a Fellowship in 1960, is a lecturer in the Faculty of Music.

Three of the 1966 Putnam competition winners also gained distinction in the Woodrow Wilson competition. Lon Rosen won a Fellowship as well as two awards for his mathematical skill. Stephen A. Marion, a member of the winning maths team, received honorable mention in the Woodrow Wilson competition, and Barbara Keyfitz gained honorable mention in both contests. Deserved indeed was the inscribing of their names on a plaque in the Department of Mathematics.

The 1966 Woodrow Wilson Fellows are:

Jeremy Anglin, Stephen Bezruchka, Michael Bond, Robert Bothwell, Earl Breech, William Douglas, Anna Doyle, Barbara Fallis, Adele Giachetti, Richard Guisso, Kathryn Hamer, Wolf-Ulrich Haussmann, Arie Kruglanski, Beverley Lowe, Eileen MacMillan, Julia Maniates, Alan Morgan, Herman Rebel, Lon Rosen, David Runnalls, Anastasia Shkilnyk, Thomas Sparling, Peter Stangeby, Karlheinz Theil, Helen Vozobule, William Wolfson and Donald Zeyl.

Each receives full tuition and fees for one year, at any graduate school in Canada or the United States, other than his or her university; a stipend of $2,000, and an allowance for dependent children.

Honorable mention: Jane Bell, Colin Campbell, William Christian, Donna Crossan, Iain Ewing, Diane Fitt, Joan Girardot, Carolyn Grill, Douglas Hill, Mrs. Sallie Kaplan, Barbara Keyfitz, Stephen Marion, Clark Miller, James R. Miller, Sylvia Mittler, Lynda Murphy, David Rapsey, William Reeve and Janet Rogers.

WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION
1938 A.J. COLEMAN, I. KAPLANSKY,* N.S. MENDELSOHN
1940 W.J.R. CROSBY,* J.C. MAYNARD,* G.H.K. STRATHY (1)
1942 K.S. HOYLE, H.V. LYONS,* M.A. PRESTON* (1)
1946 D.A.S. FRASER,* H. SEIGEL, J.P. STANLEY (1)
1948 G.F.D. DUFF,* J.M. KENNEDY, I.A. ROSENBERG (1)
1949 J.M. KENNEDY, J.E.S. MOYSE, J.B. PATTERSON (2)
1950 J.P. MAYBERRY,* R.J. SEMPLE,* R.O. SKINNER (2)
1951 A.P. DEMPSTER* (4)
1952 A.P. DEMPSTER, F.G. BRAUER, J.P. JAMIESON
1954 M.T. GRISARU, W.M. KAHAN, C.B.H. WATSON (4)
1955 M.T. GRISARU, B.M. MITCHELL, C.B.H. WATSON (2)
1958 D.R. BRILLINGER,* Mrs. Marion GREEN, C.R. RIEHM; J. LIPMAN* (3)
1959 D.R. BRILLINGER, J. HEWETT,* J. LIPMAN* (2)
1960 J. LIPMAN, E.J. BARBEAU, A.J. KORSAK (3)
1961 A. ADLER, C.F. DUNKL, L.C. SIEBENMANN
1962 R.J. BIRGENEAU, J.M. CHAMBERS, T. WOLTER; J.E. MARSDEN
1964 R.L. PENNER, T.D. MacLULICH
1965 S.A. MARION, R.L. PENNER, M. ROSEN; Barbara KEYFITZ (3)

Barbara Keyfitz and a plaque that tells a story

Achievement in Maths

H. S. M. Coxeter

"At a party, assume that no boy dances with every girl but each girl dances with at least one boy. Prove that there are two couples gb and g'b' which dance whereas b does not dance with g' nor g with b'."

This problem (which can be solved at least three different ways) is one of twelve in the 1965 William Lowell Putnam Mathematical Competition, an annual competition for undergraduates in colleges and universities throughout North America. A special feature of this competition is that each college or university has to name three of its contestants as a team, and the teams compete as representatives of their institutions.

Left: University of Toronto mathematicians Rosen, Marion, and Penner with Professor H. S. M. Coxeter, author of the accompanying article.

The first team wins $500 for its institution (and $50 for each of its three members), the second wins $400 (and $40 for each), and the third $300 (and $30), the fourth $200 (and $20), and the fifth $100 (and $10). Moreover, the five highest ranking individuals receive $75 each, and one of these five (selected for other reasons, such as evidence of creative originality) is awarded a graduate fellowship at Harvard.

In 1965, 235 teams entered the contest. Among these, Toronto's team (Stephen A. Marion, Richard L. Penner, and Lon M. Rosen) was ranked third; it was excelled only by Harvard and M.I.T. Lon Rosen was one of the five highest ranking individuals among the 2,067 competing.

The idea of mathematical competitions for students can be traced back to 1894, when the Mathematical and Physical Society of Hungary organized the Eötvös Competition in honour of the physicist Baron Loránd Eötvös, who became minister of education that year. The enthusiasm engendered in the young people of Hungary by that annual competition may well be among the reasons for the extraordinarily high incidence of mathematical eminence in that small country. One of the winners, Gábor Szegö, who has long been a professor at Stanford University, recalls the story of a prisoner at a concentration camp during the Nazi regime. The supervising officer, happening to hear the prisoner's name, asked whether he was indeed the so-and-so who had solved so many problems in the old student days. From then on, this prisoner received more lenient treatment in the camp and even had some mathematical contact with the all-powerful officer.

In connection with enthusiasm fo problem solving, mention should also be made of the (British) Educational Times, which published mathematical questions and solutions of high calibre around the turn of the century.

In an article in the December 1921 issue of the Harvard Graduates' Magazine, William Lowell Putnam complained that, whereas college teams compete in various sports, "All rewards for scholarship are strictly individual . . . No opportunity is offered a student by diligence . . . to help in winning honour for his college . . . Little appeal is made to high ideals or to unselfish motives. Is not this one of the reasons why the effort to interest the great bulk of the undergraduate body in their studies is such an uphill task?"

Mr. Putnam's belief in the value of the spirit of intercollegiate emulation in scholarship was shared by Mrs. Putnam and by her brother Abbott L. Lowell, then President of Harvard. To give substance to this idea, Mrs. Putnam established a $125,000 trust in her will, written in 1927. She directed that the trustees "shall have always in mind the purpose of this trust, as set out in my husband's own words", and she incorporated a copy of his article in her will. The trustees appointed by her for this William Lowell Putnam Memorial Fund were her sons, George and August Putnam. In consultation with Professor George D. Birkhoff of Harvard, they decided to have the competition in mathematics, partly because mathematical ability can be tested by a set examination more readily than can ability in other subjects, and partly because of the strong mathematical traditions of the Putnam family.

As Garrett Birkhoff (George D.'s son) recalls in an article in the May 1965 issue of the American Mathematical Monthly (p. 471), "The first competition [1938] was won by the University of Toronto, which was asked to set the next examination and disqualify itself from competing the following year. A similar procedure was followed for about five years, the winning teams being alternately from Toronto and Brooklyn College. These victories were attributed partly to the greater maturity and more intensive concentration programme of Canadian [universities], partly to the British tradition of problem solving, and partly to the ability and devotion of Professor Harris MacNeish of Brooklyn in training students how to diagnose and solve set problems."

No special training

Toronto had its counterpart of Brooklyn's MacNeish in Professor Samuel Beatty (later Dean and Chancellor). Also the "Problems" paper, written for scholarships in Ontario since 1907, may have served to direct students' interest in this direction. However, Toronto has never given *special* training to Putnam candidates.

Garrett Birkhoff continues: "After the war . . . a special committee was appointed consisting of the distinguished Hungarian-born mathematicians George Pólya and Tibor Radó, and the first Putnam Scholar, Irving Kaplansky. Since that time, membership in the committee making out the examination has rotated and institutions have been free to win the competion in successive years whenever the ability of their teams made this possible!"

Continued overleaf

Kaplansky later became a professor at the University of Chicago and one of the world's authorities on certain aspects of the theory of groups. Other Toronto candidates who were among the first five in their years were W. J. R. Crosby (who later returned to join Toronto's staff), J. C. Maynard and H. V. Lyons (who became actuaries), M. A. Preston (now a professor of physics at McMaster), D. A. S. Fraser and G. F. D. Duff (now professors of mathematics at Toronto), J. P. Mayberry (an operations analyst in the U.S. Air Force), R. J. Semple (associate professor at Carleton University), A. P. Dempster (professor of statistics at Harvard), D. R. Brillinger (at the London School of Economics), Joseph Lipman (at Purdue), and J. R. F. Hewett (at King's College, Cambridge).

Four Toronto firsts

As for winning teams, Harvard has been in first place eight times, Toronto four times, Brooklyn College and California Institute of Technology three times; Harvard and M.I.T. have each been in second place five times Toronto four times, Yale three times; Harvard and M.I.T. have each been in third place four times, Toronto and Columbia three times.

The non-triviality of the problems is attested by the fact that, in the last sixteen competitions, at least 10 per cent of the candidates scored 6 per cent or less: many of them zero.

The names of all the members of Toronto's successful teams have been inscribed on a handsome panel that hangs on the passage wall in the Department of Mathematics.

Teams are

THE FAT BOY was back in the Toronto Hospital for Sick Children again. He had first come to doctors' attention several years earlier at age 11 when he weighed nearly 200 pounds. His school sent him for medical aid.

Doctors carried out tests and found, a little surprisingly, that here was a normal, healthy child whose weight gain was caused simply by overeating and by eating the wrong foods.

The boy himself was co-operative. He wanted to lose weight. A staff doctor became personally interested in the case and tried to help the boy outside the hospital.

Despite these efforts, he got fatter. Six months later he was up to nearly 230 pounds. He was brought into hospital, slimmed sufficiently to prove the job could be done and then released with diet instructions.

Within four months he had gained back all the weight he had lost.

Examining all the circumstances, doctors realized they were facing a medical problem created by non-medical circumstances. In the boy's home there was no help, understanding. There was resentment against outside help.

This was one of the cases presented to students and faculty of the University of Toronto attending the Fifth Interprofessional Student-Faculty Seminar. Its purpose: to find ways in

;nswer but where are they?

which members of the "helping" professions can work together.

This year's seminar was organized by the University's Department of Paediatrics with Dr. J. Harry Ebbs as the chairman. Some 260 students and faculty attended from the Schools of Nursing and Hygiene, Ontario College of Education, Institute of Child Study, Departments of Psychiatry and Pediatrics, Faculty of Dentistry and the psychology and psychiatry departments in Hospital for Sick Children.

The theme of the seminar was not concerned with offering solutions to the cases offered but to discuss ways in which the various professions could work together on similar cases and what each might offer.

Take the case of the girl, now a teen-ager, who has had diabetes since a child. Especially in the very young, diabetes requires careful attention to diet, exercise and administration of insulin. But a small child cannot look after these things herself. What if, as in this girl's case, her home can't help enough either—if her parents don't get along, and the father is hostile and the mother a nervous case? Is this a medical problem and, if not, whose problem is it?

And what about the young man who has fibrocystic disease throughout his teenage years, who requires up to $100 a day for drugs, to say nothing of special apparatus of all kinds, personnel to help him and subsidized hospitalization? He knows his disease will probably kill him sooner or later. What sort of non-medical aid does such a young man need at an age when he should be in his first job, dating girls and looking forward to setting up a home?

Discussion of problems created by cases like these were taken up in 15 small groups in which the various professions were intermingled. And some revealing ideas came forward.

"I thought the medical profession was a bit hard to get along with and even rejected other professions," said one social worker. "But at this seminar we really all got together and I definitely felt the doctors wanted our help and were fully aware how much their patients needed it."

"I was really impressed with the need for these seminars by the way the discussions went in the groups," said Professor M. F. Grapko, Acting Director, Institute of Child Study.

There was evidence even that students did not know what those in other professions did.

Indicative of this was the student in one group discussion who looked up and said: "Now just what does a social worker do?"

All sorts of doubts and uncertainties emerged.

Should there be some sort of pecking order of professions, with one

acknowledged as superior to others? If so, should it be superior in all cases, or should the need of the case determine which profession takes the lead?

To what extent should a profession purvey information about patients to other professions, some of which may not even be licensed? Doctors in some cases may feel that private information given them by patients would no longer have the same private status in law if shared with a profession not equally recognized.

Social workers are not at present recognized by licensing in Ontario. Anyone, theoretically, can hang out a shingle. This doesn't create a problem so far, because virtually all social workers are attached to agencies (except a few who have lately entered private consultant practice).

How do you consult a social worker privately without involving the whole agency?

Share the records?

Should there be some central agency or clearing house where patient's records could be kept for sharing among all the professions as needed?

Should information about the working methods of the various helping professions be worked into the curricula of all the various schools?

This kind of interprofessional meeting is very new, pioneered in Canada by University of Toronto in 1962 (two centres in the U.S. began somewhat similar types of meetings at about the same time). The first Toronto meeting was organized by the School of Social Work. Each year, now, a different faculty undertakes the organization of the seminar and presents the program.

"The exciting thing about this seminar is the way in which the various professions speak out," said Professor Ruth Robinson of the School of Social Work.

"This year," she continued, "some of the nurses told the doctors they didn't use public health nurses efficiently enough. And the doctors were interested quite genuinely in this point of view. I admit I first took part in these seminars a little sceptically, but I'm one of the biggest enthusiasts now. It's always possible that in the future the form of the seminar may change, but I'd hate to see the idea of these regular annual meetings abandoned."

Dr. C. C. V. Pitt, of the Ontario College of Education, said teacher-students get a great deal out of the seminars "and we have been strong supporters of the idea."

If there was one central problem uncovered by this year's seminar it may have been voiced by Dr. Ebbs. On many cases it is clear, he said, that teamwork would be needed to achieve the best possible results. In fact, there are so many such cases that it is obvious there never could be enough teams to go around.

"Either we will have to pick out cases for the teamwork approach, or we will have to reduce the number of case that need it.

"The latter possibility could only be done by prevention of the problem before it happens. And that suggests parent education."

Medical Research: *A Triple Responsibility*

W. G. Bigelow

In the last three decades the word research has become prominent in almost every line of endeavour, including government and business. It might be interesting to look at this popular word and something of what it implies in medicine today.

It may be difficult for those outside the medical profession to fully understand why research is so important to ensure good medical care and teaching. Perhaps they ask themselves: "Is research a popular whim?"; "Is it a status symbol?"

A brief peek at medical history is necessary to understand the reason for this new emphasis on research. We all know of the pre-science era when illness could be the wages of sin and where medical concepts and treatment were handed down as a tradition without question. I suppose the science era had its very early beginning with Hippocrates, who was one of the first on record to suggest that medical men should use their own powers of observation and open their minds to rational medical practice. This is all beautifully described in Wilder Penfield's book "The Torch".

Medicine has made great strides during the science era, particularly in the last hundred years. Throughout this period doctors have improved medical care by making use of any new knowledge of disease that emanated from research laboratories. Until thirty years ago most of this medical research was carried out in basic science laboratories under the direction of university teacher-scientists whose activities usually did not include care of patients. It is interesting to find that such scientists are often motivated by a desire for medical knowledge quite unrelated to the possibility of applying this new knowledge

This article is from an address by the author to the Canadian Heart Foundation.
W. G. Bigelow, M.D., F.R.C.S.(C) is Associate Professor of Surgery at U of T and heads the Cardiovascular Division of the Toronto General Hospital, a division of the University's Department of Surgery.

to improve the health of the community. Furthermore, if a more practical aspect of his research is suggested as a line of study, he will be interested, but may not be diverted. As a matter of fact, some of the purists will feel that having a practical goal is at odds with the finest research traditions. Thus, for a very long time, this lack of contact between "the clinician" (in charge of patient care) and the medical researcher has imposed a limit on the value of research in medical practice.

In the nineteen thirties, however, a revolution occurred in research. "The clinician" turned to the experimental laboratory. He became a part-time scientific investigator. His research was naturally clinically oriented and designed to provide practical knowledge of health and disease. This has undoubtedly been a major factor in the remarkable recent growth of the medical sciences.

I believe the first official recognition of the importance of this new research trend was the appointment in 1941 of Alfred Blalock as Professor of Surgery at Johns Hopkins Hospital. Until that time European, British and American universities appointed departmental heads who were outstanding clinicians, outstanding teachers and outstanding administrators with some interest in clinical or patient research but no special experimental research interest or ability was required. Professor Blalock's appointment was a complete contradiction by Johns Hopkins Hospital of all previous standards. Alfred Blalock was a superb research man who, prior to his appointment as a young man had already contributed current concepts of traumatic shock. He was relatively untried as a teacher, a modest clinical surgeon and untried as an administrator. Alfred Blalock, whose death was mourned a short time ago, went on to contribute to medical science with the development of the blue baby operation, and he really gave us all courage to operate upon the heart. He established a school for training surgeons who were all heavily research oriented, and you will find them as professors and heads of departments in a dozen top medical schools in the United States.

In the last two or three decades research has become an integral part of the training and activity of a large number of the hospital-based university teachers, or clinicians in the United States and Canada. The department head need not be a research man, but he should have a real interest in research and full knowledge of its importance, since experience has shown that an active experimental research program, directed by clinicians, with due regard to their responsibility to undergraduate teaching, insures first class medical practice and teaching.

GOVERNMENT RESPONSIBILITY

Now let us examine the questions, "Why is research so important?" and "Why should the government accept such a heavy financial responsibility?"

(1) *New Discoveries*: First of all it is easy to understand how important it is to make discoveries. If they are made in Canada it helps our national,

provincial or foundation pride and produces a model and stimulus for Canadian students, as well as, we would expect, a contribution to world health.

Dramatic discoveries are few and far between. The mass of research that goes on in cancer, hardening of the arteries, rheumatic fever, is the slow painstaking accumulation of data and tedious mastery of techniques. The Salk vaccine represents a dramatic step forward, based on the work of many hundreds of investigators. Regarding heart or cardiovascular research, we have produced in Canada our share of outstanding contributions since the Second World War and a great deal of this has been with the help of the Canadian and Provincial Heart Foundations, as well as government agencies.

To name a few that have been supported by the Heart Foundations, and certainly with no attempt at a complete list, one may cite Jacques Genest of the University of Montreal, who has made a specific contribution to the understanding of high blood pressure. He has related kidney and adrenal function. A good deal of this work centres around the substance called aldosterone.

Doctor Beveridge of Queen's has contributed to the understanding of hardening of the arteries—and who is not interested in this? It is like looking for the philosopher's stone and I am sure about as difficult an area to study. Specifically his work deals with cholesterol.

Fraser Mustard of Toronto has provided, in recent years, dramatic new information regarding the blood with special reference to platelets, which in turn may throw some light on the problem of hardening of the arteries.

Allan Burton of the University of Western Ontario keeps us honest with his pure physical approach to our medical problems and among other things is contributing to our knowledge of the mechanical actions of the heart and the viscosity and flow of blood in small vessels. After all, it is the small vessels and capillaries that actually deliver the oxygen to the tissues.

It is not generally appreciated that the electric pacemaker for the heart is a Canadian contribution. John Callaghan, now of Edmonton, and Jack Hopps of National Research Council, Ottawa, while working on hypothermia with me at the Banting Institute created the first pacemaker for clinical use and demonstrated that the electrical impulses would keep the stopped heart going and maintain the blood pressure.

Doctor Nickerson of Winnipeg has set everyone thinking on much more productive lines regarding shock.

One of the few new principles that have come out of Canada was Doctor Vineberg's very improbable demonstration of putting a bleeding artery from the chest wall into the heart. The implanted artery will provide a new circulation for the heart muscle. This operation is successfully used for patients with coronary artery disease and angina. We have demonstrated with special X-rays that, in patients operated upon by Doctor Vineberg's

technique, their implanted artery is open and functioning as much as eight years after operation.

Gordon Murray of Toronto worked before the break-through of open heart surgery and before Heart Foundations. He demonstrated, not too many years ago, that a heart valve transplanted from one human to another will function for a good many years.

Of course there are Doctors Harold Segall, John Keith and Paul David who, over the years, have made great contributions to our understanding of heart disease and are prominent as teachers in this field.

The study of hypothermia or total body cooling, a Canadian contribution by our team in Toronto, found initial financial support from the Defence Research Board and it has been generously supported by the Ontario Heart Foundation in recent years. We were lucky, I suppose, to have fallen into an area where we could promote a new basic concept. The idea of cooling the body to reduce the oxygen requirements as a means of doing heart surgery occurred to me while engaged in some postgraduate cardiovascular training at Johns Hopkins after the war, and I could hardly wait to get back to the Banting Institute to put the theory to the test. It is interesting that, at this time, most of the scientific articles suggested that cooling the body actually increased the oxygen requirements.

This was the only method of open heart surgery for a while and it was soon superseded by the heart-lung pump which allowed longer periods for surgery within the heart. Eventually, both techniques were combined. In present day surgery the patient is connected to the heart-lung pump and the blood is cooled. This cooling technique is used in every country doing this work today, and they have all, including the Russians, been very generous in giving us credit for starting it.

(II) *Training and Teaching*: It is self evident that research is of prime importance in training and teaching areas. A good medical graduate should have background knowledge, a good deal of the current knowledge and a knowledge of current research. The latter helps him understand developments which will occur after he leaves school, thus providing a better insight into his work.

This does not mean that all teachers must be research workers. As a matter of fact some researchers do their best to avoid teaching. To quote President Claude Bissell, "The formal medical course has become the beginning, not the end, of a doctor's education." It is, particularly in the postgraduate medical education, where the "research teacher" is needed.

(III) *Standards of Excellence—University Medical Faculty*: Until recently Canadian medical schools and Canadian medical men have followed the lead of Britain and France and accepted their standards of excellence. Now the United States is the leader in most phases of medicine and it would appear that this has been brought about by a rapid transition and heavy

Commenting on the accompanying article at Dr. Bigelow's request, Dean John Hamilton said he felt the brain-drain situation had improved since Dr. Bigelow read his paper. "For example," he said, "we have two Americans joining the pharmacology staff this year because we have been able to offer competitive salaries and, in this department, good research facilities."

Dr. Hamilton estimated it would be three years before U of T has research facilities competitive with those south of the border. He said the new Medical Sciences Building and more research space in the teaching hospitals would mark the beginning of a new era.

"In the meantime," he concluded, "we are doing everything possible to obtain temporary space that will enable us to attract new staff."

orientation to research. As other world leaders have done, in the past, the Americans have set their standards of excellence in medicine and, as we have done in the past, there is little alternative but to try to meet them. These standards are based, among other things, on the amount and excellence of research in the university. It is actually an advantage for Canadian medical schools to be periodically rated by a team of American university men representing the Association of American Medical Colleges. Thus the excellence of our medical schools would appear to depend, in a large measure, upon the extent of research and this in turn requires more money for salaries, equipment and space.

Why do we want excellent medical schools and a good rating? Our current view is that this attracts better teachers, better students, and most important, it attracts more foreign postgraduate students to leaven the bread of knowledge. Where there is excellence one can expect more financial support, it ensures productivity and prevents a "brain drain".

I suppose I should comment on this popular topic of "brain drain". There appear to be authoritative voices claiming and disclaiming that this exists. I do not know personally and I wonder if anyone can be sure.

My personal thoughts are that I do not think we have to lose many people to have a "brain drain". How many Churchills could England afford to have lost? How many Doug Ambridges (President of the Canadian Heart Foundation) could Canadian industry afford to lose? In the whole area of medical sciences across Canada it is possible that the loss of three or four men, of sufficiently outstanding ability, in five or ten years could be a detriment.

By personal experience I know two young Canadians who are extremely competent and of international reputation, one in blood diseases and the other in heart, who would like to return to Canada but we cannot match the salary and facilities that they have been given in the United States to pursue their work. One of these men may make a great contribution, or discovery, and one might say it does not make any difference to humanity

whether he makes this discovery in the United States or Canada. But one should also think of the number of Canadian students that this man could attract and influence while he is making this contribution.

On the other side of the coin are the Canadian university men, including medical men, who have refused flattering offers to go to foreign countries. Sometimes it is difficult for these men to explain why they stay, but I would judge it is because of certain intangibles that Canadian universities have, such as some fine British and French traditions, a balanced approach to new things, and (without being too snobbish) an aura of ethics and morality, with a minimum of petty politics. A final reason, most difficult to assess, is our proximity to good hunting and fishing!

(IV) *Standards of Excellence for the Individual University Man*: For Canadian medical men to have easy communication with the top men in their field in the United States, they must belong to the best medical societies. There, by personal contact, they can become aware of trends and truths. Here again, these societies require that their new members have heavy research orientation with evidence of some contribution to medicine. There are a fair number of Canadians in the top medical and surgical societies in the States, but not enough. A medical school where the staff are not members of the top ranking societies in the United States could be compared to a stock company that has no seat on the Exchange.

(V) *Better Medical Care*: In the event of an important discovery coming from research elsewhere it is usually not possible to transplant this new knowledge immediately to your university or hospital unless you already have research in progress in this field. Having such a fertile soil will allow earlier and more expert use of the new advances.

For example, we have carried on a continual study of hypothermia in the experimental laboratory since 1948. There were four years of research before clinical patients were operated upon with this technique. There was a period of about ten years during which a whole mass of information accumulated in the world literature on hypothermia and, later, on the combination of hypothermia and the heart-lung pump. With our background of knowledge, technical equipment and staff we have gone through this period in the enviable position of being able to assess intelligently the value of these new advances and to give our patients immediately the advantage of each worthwhile discovery from another centre as it has become available.

As another example, it was recently discovered that taking a biopsy of kidney (a little piece of tissue), and examining it in a certain way, would make a diagnosis possible in certain important kidney conditions that were hitherto difficult to diagnose. This new knowledge arrived at the Toronto General Hospital where there were two research teams: one studying kidney function, and the other in pathology,

(*Continued on Page 110*)

DEPARTMENT HEADS ON CAMERA (I)

The Faculty of Medicine

Photography by Bob Lansdale ——— Text by Winogene Ferguson

Along with many of his colleagues, Dean John Hamilton (*above*) has discovered there are times when a medical doctor needs a slide rule rather than a stethoscope. In Toronto's Faculty of Medicine, such a time is now. Physical transformation, including the move of basic disciplines into a vast new medical sciences complex, is only about three years away.

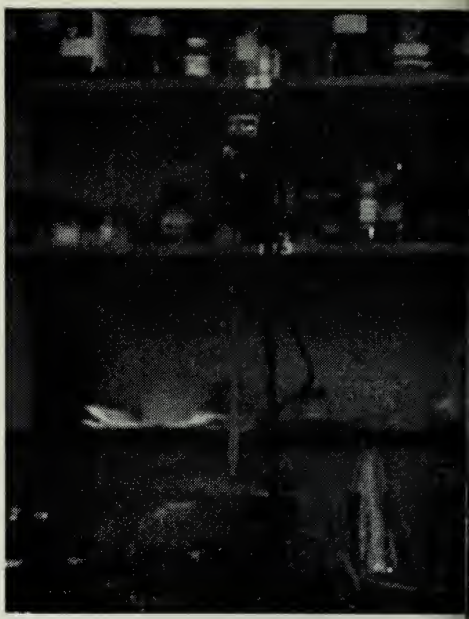
Dean since 1961, Dr. Hamilton is a Toronto graduate who continued studies at Cambridge University and Johns Hopkins Hospital, Baltimore, combining teaching and research in pathology. He served overseas with the RCAMC in World War II. In 1946, after a year on staff at McGill, he was appointed Head of Pathology at Queen's. Five years later he moved to the same post at Varsity and became Pathologist-in-Chief, Toronto General Hospital.

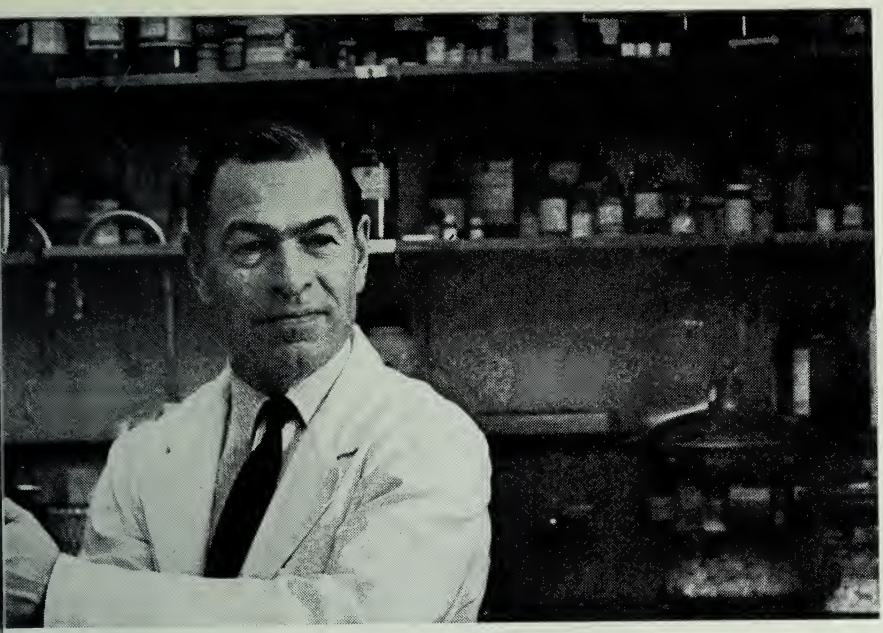
His principal research interests have been arteriosclerosis and hypersensitivity.

Frederick G. Kergin, Head of the Department of Surgery (*below*), has been appointed Associate Dean of Medicine with special responsibility for clinical activities in the university's teaching hospitals, including Sunnybrook (*background*), soon to become the first university hospital in Ontario. He is Surgeon-in-Chief to the Toronto General Hospital; Consultant Surgeon to five other hospitals; Vice-President, American Association of Thoracic Surgery; and a council member of the Royal College of Physicians and Surgeons of Canada.

R. Ian Macdonald (*right*) was appointed Associate Dean of the Faculty of Medicine, a newly-created post, in 1964. He is also Director of the Division of Postgraduate Medical Education, and Professor of Medicine. He joined the staff in 1936, and was on leave for five years for RCAMC service. Dr. Macdonald has been Adviser in Medicine to the Director General of Treatment Services, Department of Veterans' Affairs, since 1958, and for 17 years was Chief of Service—Medicine, at Christie Street Hospital, later replaced by Sunnybrook Hospital.

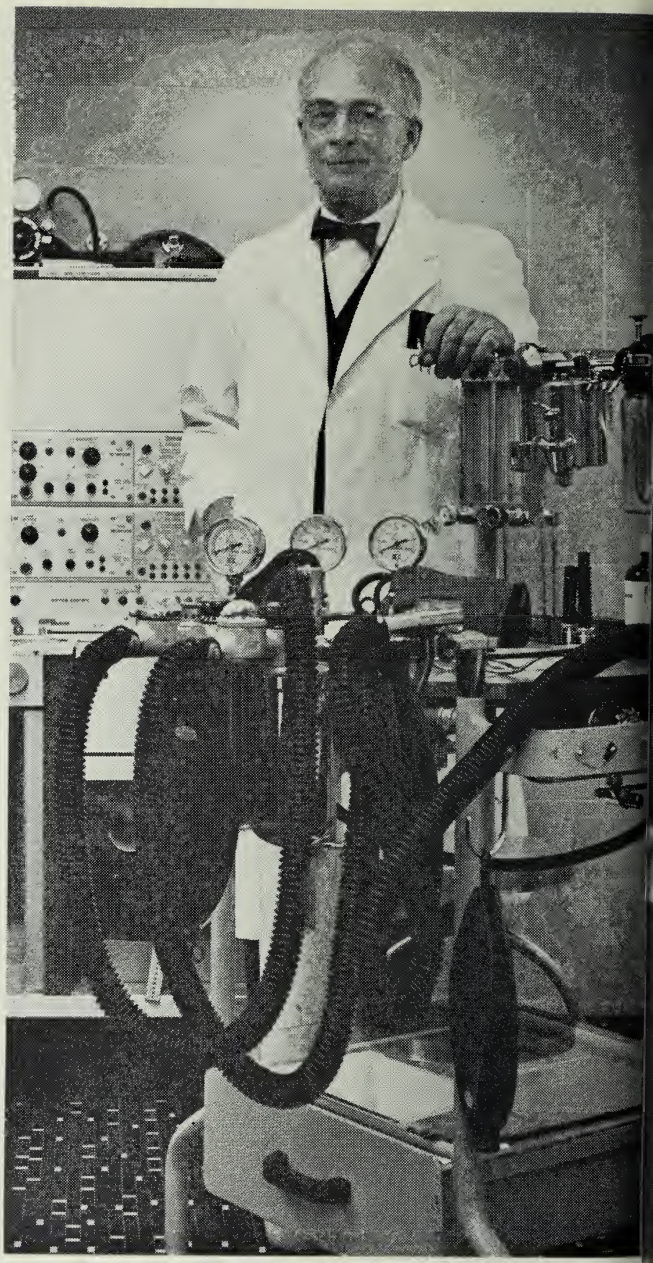
Edward A. Sellers (*right*), Head of the Department of Pharmacology, was recently appointed Associate Dean of Medicine with responsibilities for the development of basic science departments and organization and development of departments in the new Medical Sciences Building, and their relationships with the teaching hospitals. Dr. Sellers joined the staff following service with the Royal Canadian Navy. From 1955 to 1958 he was Chief Superintendent of the Defence Research Medical Laboratories, Department of National Defence.

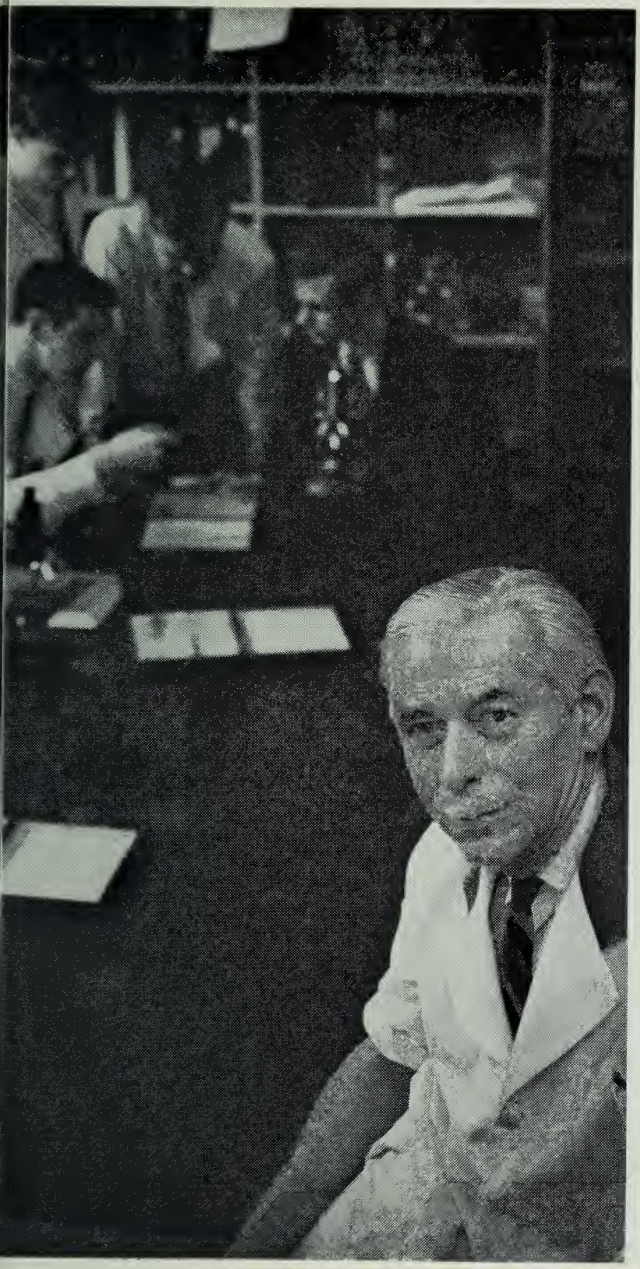




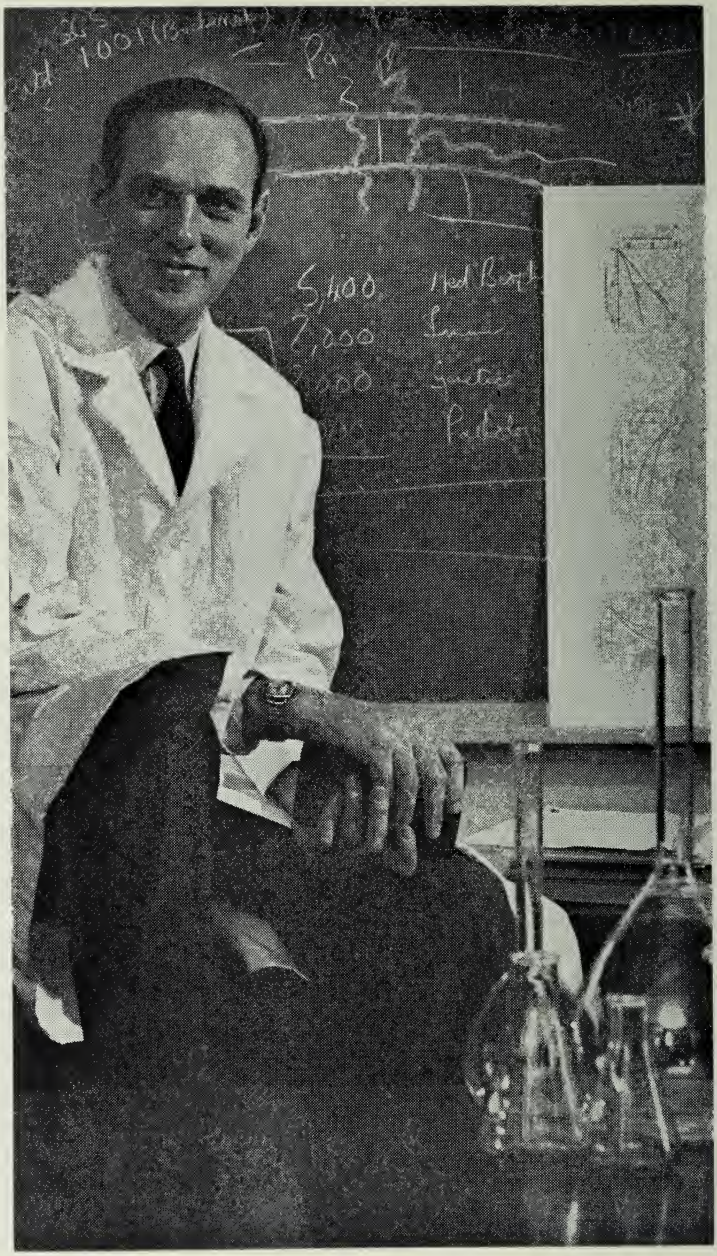
Jan W. Steiner, Associate Dean—Student Affairs (*left*), is concerned with improved methods of student selection; acts as student adviser; and endeavours to develop good staff-student relations. Dr. Steiner studied medicine in Czechoslovakia, served in five armies during World War II, studied further at the University of Liverpool and practised medicine in England for ten years. He is Professor of Pathology, Pathologist to the Toronto General Hospital, and an Editor of the American Journal of Pathology.

Roderick A. Gordon, Head of the Department of Anaesthesia, and Anaesthetist-in-Chief to the Toronto General Hospital, joined the staff after RCAMC service. He is Consultant in Anaesthesia, Canadian Forces Medical Council, Ontario Cancer Institute, Princess Margaret Hospital, and Women's College Hospital; on the executive committee, World Federation of Anaesthesiologists; Chairman, organizing committee, Second World Congress of Anaesthesiologists; and Editor of the Canadian Anaesthetists' Society Journal.

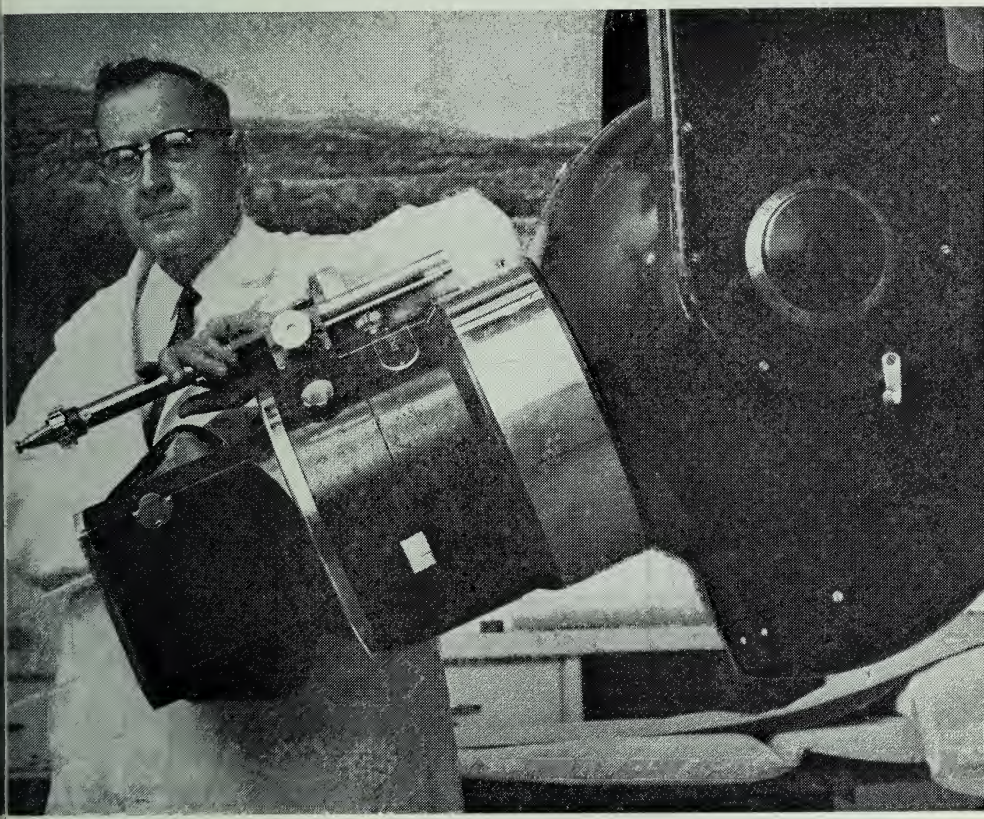




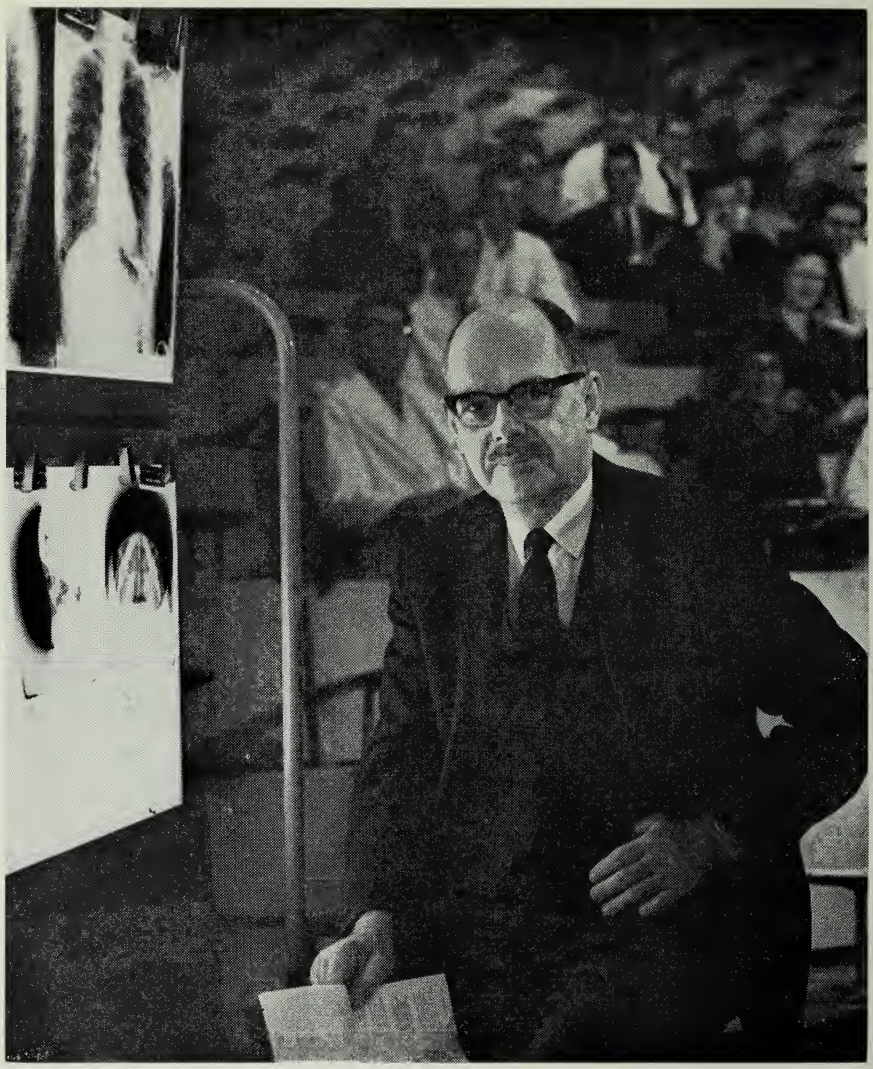
Arthur W. Ham is Chairman of the Department of Anatomy. In 1956 he was made Head, Division of Biological Research, Ontario Cancer Institute, and for four years was Head of the new Department of Medical Biophysics, chiefly created by him. Dr. Ham has been honorary secretary of the Banting Research Foundation since 1937, and was one of the original members of the Research Advisory Group, National Cancer Institute of Canada. His textbook, *Histology*, now in its fifth edition, has been translated into Spanish, Portuguese and Italian.



George E. Connell (*left*) was appointed Chairman of the Department of Biochemistry last July. He is a member of the Medical Research Council and of the Board of the Directors of the Canadian Arthritis and Rheumatism Society. Dr. Connell's work has been chiefly concerned with the chemistry of proteins, especially enzymes and proteins of blood plasma. His 32 published papers include reports of work on genetics in relation to protein structure, on blood clotting phenomena, and on the nature of antibodies in the blood.



Harold E. Johns (*above*) is Head of the Department of Medical Biophysics, Professor of Physics, and Head of the Physics Division, Ontario Cancer Institute. Dr. Johns invented and built, with J. A. MacKay, at the University of Saskatchewan, the first Cobalt Unit and made basic measurements still used throughout the world; also had there the first Betatron. Among his many honours are The Canadian Association of Physicists' Medal; the Roentgen Award of the British Institute of Radiology, and an LL.D. from the University of Saskatchewan.



K. J. R. Wightman has been Sir John and Lady Eaton Professor of Medicine and Head of the Department of Medicine since 1961, and also Physician-in-Chief to the Toronto General Hospital. A Toronto graduate with postgraduate training at Cambridge, England, he served overseas and joined the department in 1947. During 1950 and 1951 he was also in charge of Therapeutics. Dr. Wightman's interests range through all aspects of medicine, although he is known particularly for his studies of the blood.

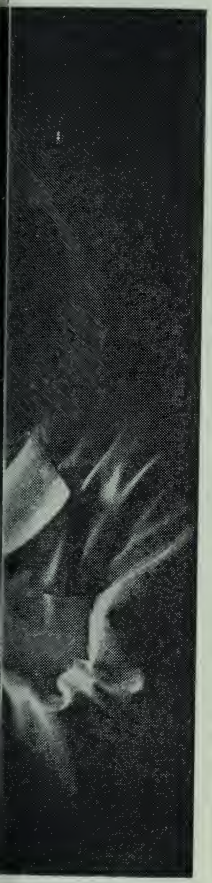
William M. Paul is Gordon C. Leitch Professor and Head of the Department of Obstetrics and Gynaecology, and Obstetrician and Gynaecologist-in-Chief to the Toronto General Hospital. A Toronto graduate, he was Resident in Toronto's Western and General Hospitals, and also trained in the Department of Embryology, Carnegie Foundation, Baltimore. He was Director of Obstetrics and Gynaecology, University of Alberta, 1962–65. Dr. Paul's research interests principally involve studies of fetal cardiovascular regulation.

J. Clement McCulloch (*left*), Head of the Department of Ophthalmology and Ophthalmologist-in-Chief to the Toronto General Hospital, is also Consultant to the Canadian Forces Medical Council, adviser to the Canadian Defence Research Board, and an Editor of the Canadian Journal of Ophthalmology. In March Dr. McCulloch represented Canada in Paris at the International Symposium on Flash Blindness sponsored by the visual sub-committee of AGARD, NATO's committee for aeronautical research and development.

Percy E. Ireland (*above*), Head of the Department of Otolaryngology, is also Otolaryngologist-in-Chief to the Toronto General and Sunnybrook Hospitals, and Consultant to the Hospital for Sick Children and the Women's College Hospital. He is on the Examining Board of American Specialists, Otolaryngology, and a member of many other societies. During World War II, Dr. Ireland served as Consultant Otolaryngologist in Canada and Europe, and was adviser to Canadian Military Headquarters, London, England.

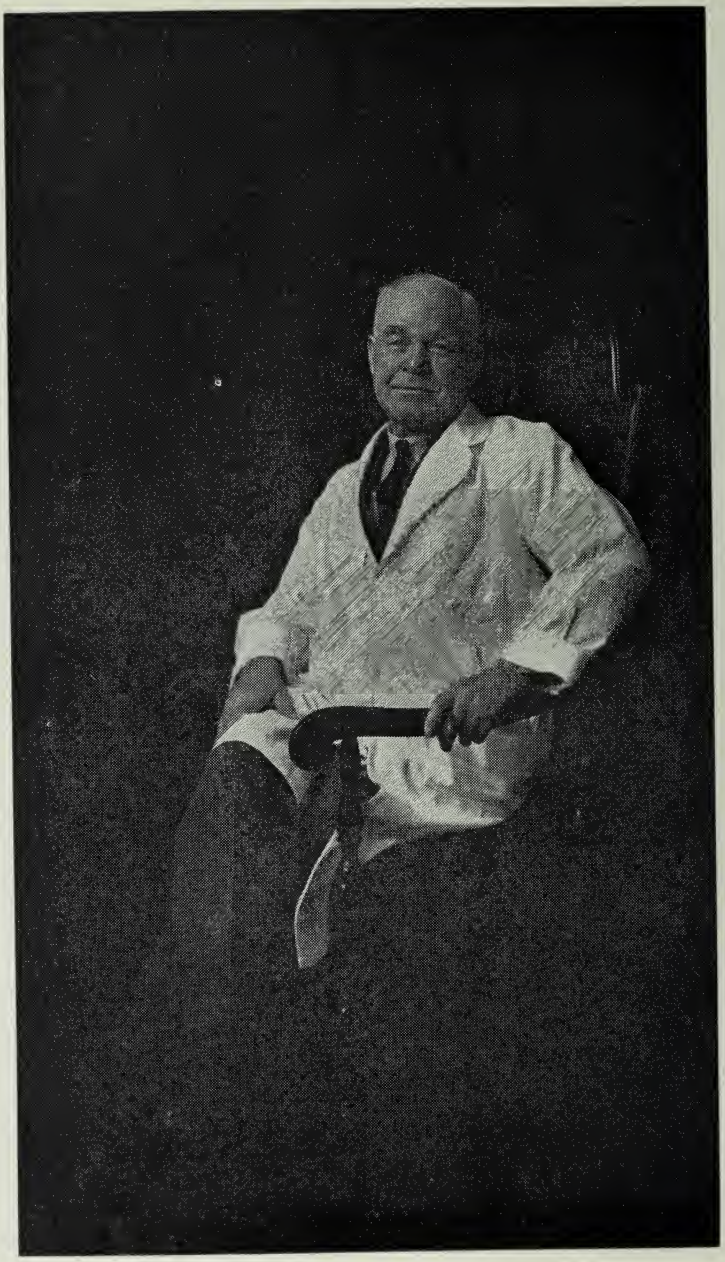
James A. Dauphinee (*below*) is Head of the Department of Pathological Chemistry; an Associate in Medicine; Attending Physician, Toronto General Hospital, and Consultant Physician to Sunnybrook Hospital. He saw service in the RCAMC and became Lieutenant-Colonel in North West Europe, earning the O.B.E. Dr. Dauphinee enjoys undergraduate teaching and retains an interest in the practice of medicine. This year he is President of the Royal Canadian Institute.

Alexander C. Ritchie (*right*), Head of the Department of Pathology and Head, Division of Pathology, Toronto General Hospital, was educated in New Zealand and at Oxford. At the William Dunn School of Pathology in Oxford he was on the British Empire Cancer Campaign Research Unit working with Sir Howard Florey on antibiotics. Other posts have been at the Auckland Hospitals, Chicago Medical School, Massachusetts General Hospital, St. Mary's Hospital in Montreal, and McGill University.

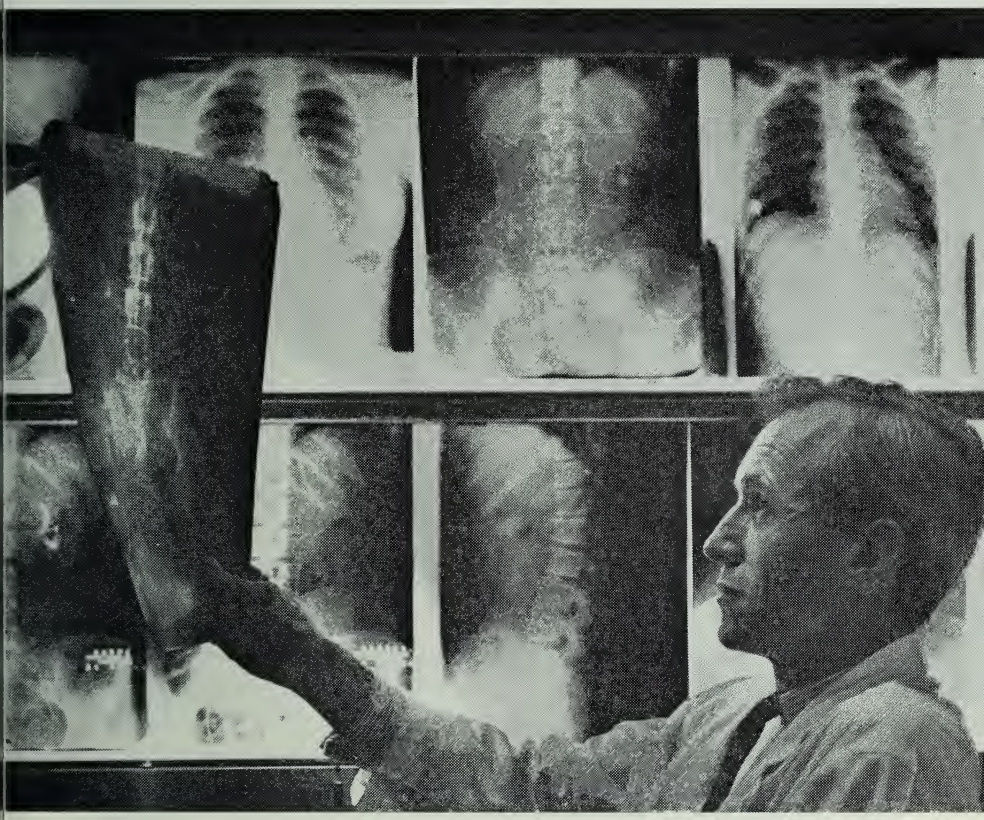


Reginald E. Haist (*above*) is Chairman of the Department of Physiology and Professor in the Banting and Best Department of Medical Research. He is on the Medical Advisory Board of the Alcoholism and Drug Addiction Research Foundation, and is past president of the Canadian Physiological Society. Dr. Haist's primary interests have been in studies of experimentally produced diabetes and in the Islets of Langerhans. He has contributed to knowledge about shock, secondary to injury, and the effects of hypothermia.

Aldwyn B. Stokes (*below*) came from England in 1947 to head the Department of Psychiatry, and was also for three years Director of the Toronto Psychiatric Hospital. He has played an important role in the evolution of the new Clarke Institute of Psychiatry. During the war Dr. Stokes was involved with the organization of the Mill Hill Neurosis Centre, where he became Medical Superintendent, and with the Dartford Centre for repatriated prisoners of war. In 1945 he became Medical Superintendent, Maudsley Hospital.

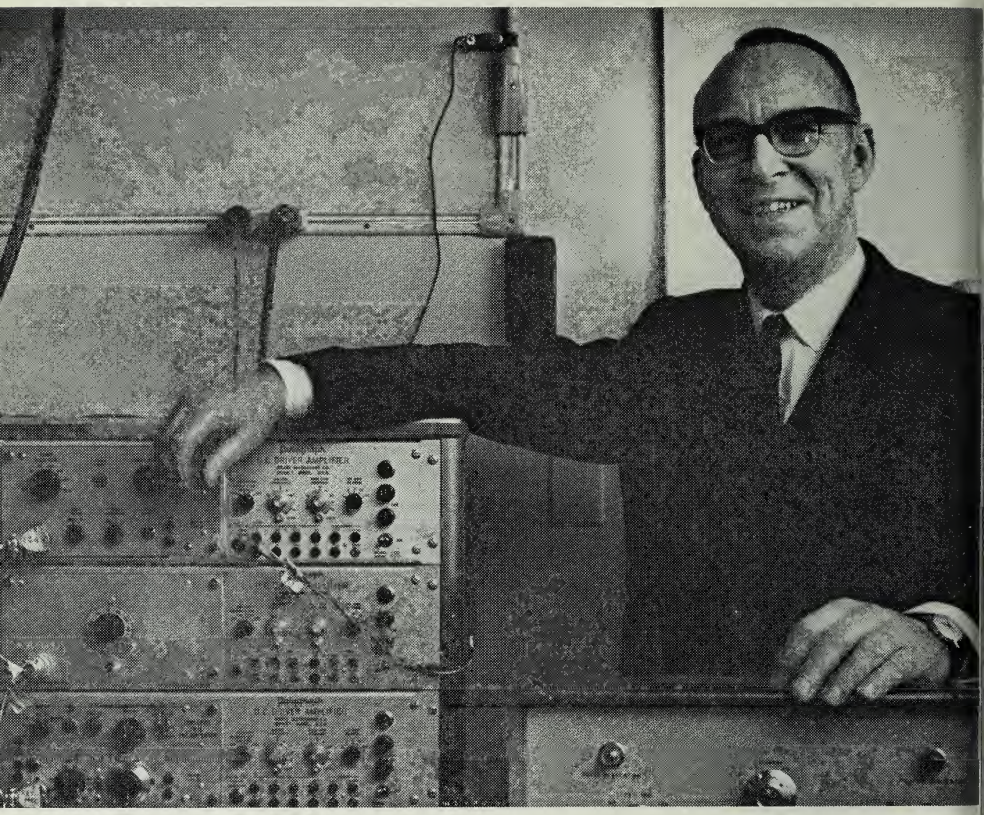


Milton H. Brown (*left*) is Head of the Department of Preventive Medicine, Head of the Department of Public Health in the School of Hygiene; and Associate Director of both the School and the Connaught Medical Research Laboratories. He began his medical career in 1928 as a Clinical Associate in the Connaught Medical Research Laboratories. From 1939 to 1945 Dr. Brown served in England, Italy and Northwest Europe as Director of Hygiene with the rank of Colonel, and was awarded the O.B.E. in 1942.

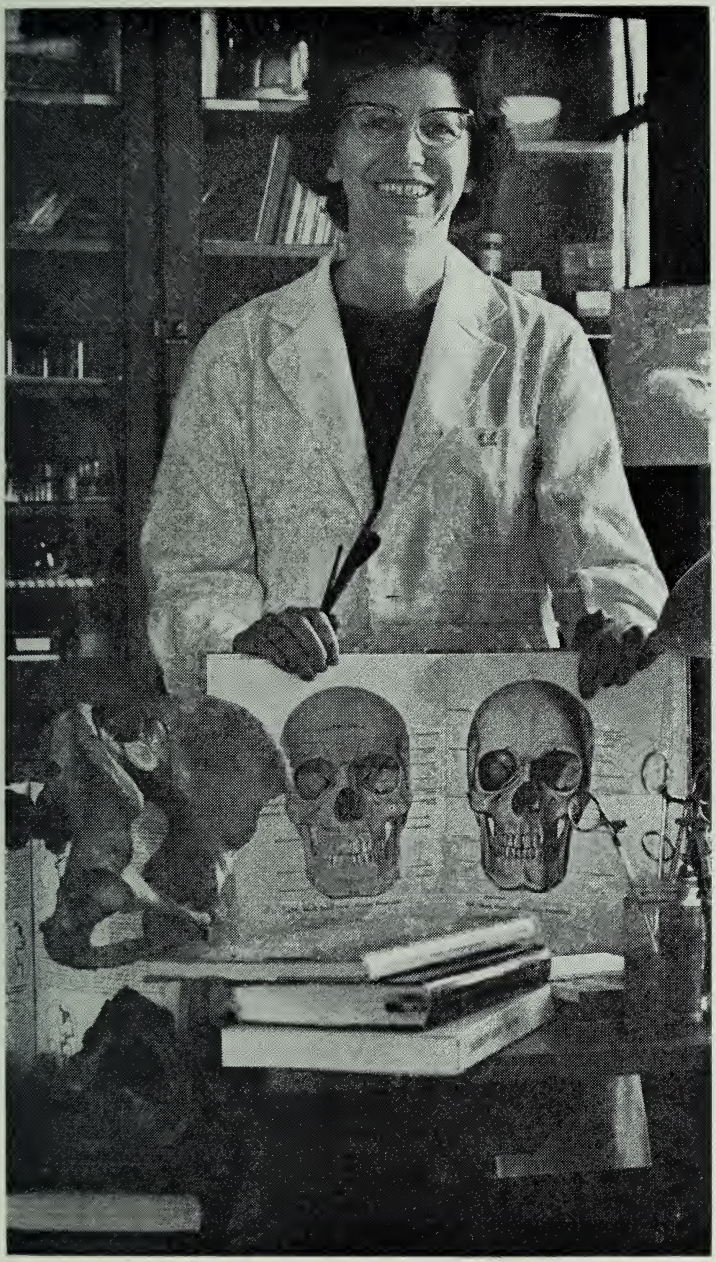


R. Brian Holmes (*above*) is Chairman of the Department of Radiology and Radiologist-in-Chief to the Toronto General Hospital. Graduate of the University of Western Ontario, he joined the Toronto faculty in 1950. He was elected a Fellow of the Royal College of Physicians of Canada in 1952 and a Fellow of the American College of Radiologists in 1959. Dr. Holmes' published papers include a number on diseases of veins and on the use of television and motion pictures with X-ray apparatus.

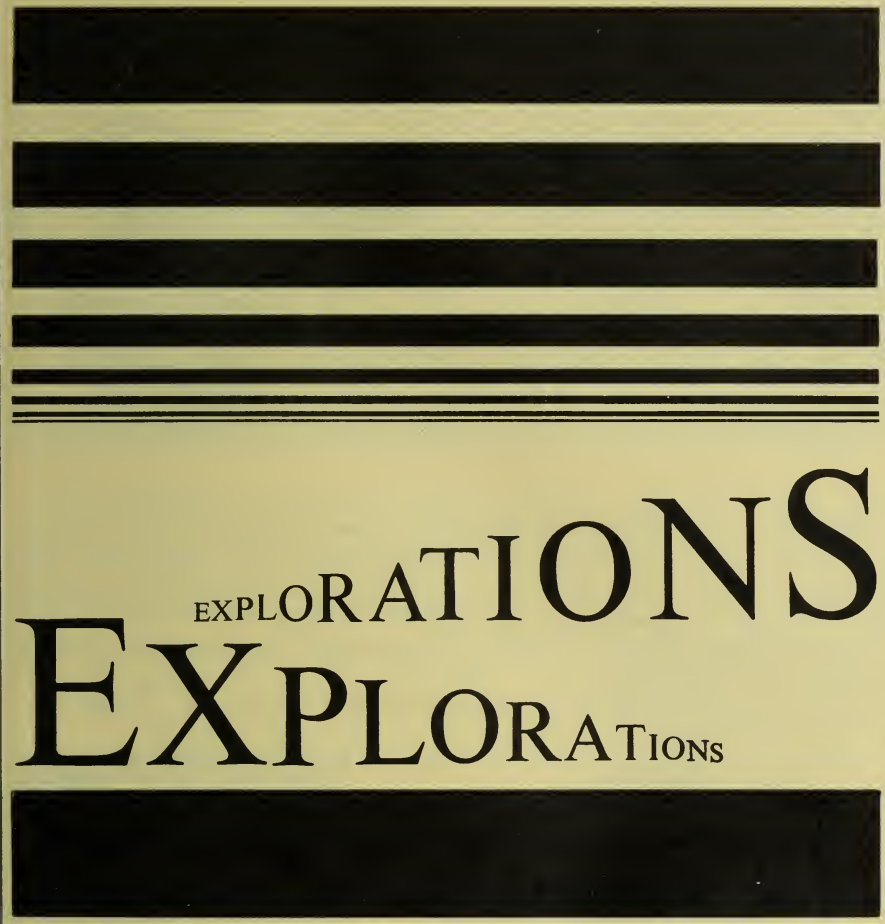
Ramsay W. Gunton (*below*), Head of the Department of Therapeutics, Associate Professor in Medicine, and Physician, Toronto General Hospital, is leaving to become Professor of Medicine at the University of Western Ontario. Dr. Gunton is Chairman, Committee on Pharmacy, and on the Council of the Canadian Medical Association; on the Canadian Drug Advisory Committee, Food and Drug Directorate, Ottawa; Chairman, Panel on Antibiotics, and on the Defence Medical Research Committee of the Defence Research Board.



Nancy Joy (*right*), Director of the Department of Art as Applied to Medicine, came from the University of Manitoba staff. She has worked with anatomists at the Universities of St. Andrews and Edinburgh, and as a free-lance illustrator with surgeons in six London, England, hospitals. Miss Joy has illustrated several books, among them six editions of J. C. B. Grant's *Atlas of Anatomy*, and many scientific articles; she and her staff advise authors regarding design; draw for films; set up medical exhibits, and teach.



Albin T. Jousse is Director of the Division of Rehabilitation Medicine, and also Medical Director of Lyndhurst Lodge Hospital, a member of the attending staff, Toronto General Hospital, and Consultant to Sunnybrook Hospital. Dr. Jousse is a graduate of McMaster University, with his M.D. and Certificate in Physical Medicine and Rehabilitation from Toronto. He is a Council Member of the International Society for Paraplegia, and on the Board of Directors of the Toronto Rehabilitation Centre.



EXPLORATIONS

EXPLORATIONS

CONTENTS

Editor: MARSHALL MCLUHAN

If Wittgenstein had been an Eskimo — EDMUND CARPENTER

IF WITTGENSTEIN HAD BEEN AN ESKIMO

EDMUND CARPENTER

FIGURE 1

According to the philosopher Wittgenstein and the art historian Gombrich, we cannot see both rabbit and duck simultaneously. Illusion, Gombrich says, consists in the conviction that there is only one way of interpreting the visual pattern in front of us. Though we may switch rapidly from rabbit to duck, we cannot experience alternate readings at the same time. A shape cannot be seen apart from its interpretation.

Discovering the rabbit in the duck produces, according to Wittgenstein, a surprise not produced by the recognition of either image alone.

"Ambiguity—rabbit or duck?—is clearly the key to the whole problem of image reading," writes Gombrich. "I had a hunch when I wrote *The Story of Art* that the explorations by surrealist artists of the ambiguity of shapes, the game of 'rabbit or duck?', would provide the best possible entry into the labyrinth of representation."

The situation provides opportunity for comparison. Here two men, both famous for their analytical investigations, choose the same illustration for intensive analysis and agree on its interpretation. Each reader can play the game himself and test the Wittgenstein-Gombrich conclusions.

However, instead of asking if Wittgenstein's students perceive as he does, let us ask how someone from a different background, say an Eskimo, perceives visual puns. Can he see the rabbit and duck simultaneously?

Occurrence of Visual Puns

I showed Dali's *Paranoiac Face* (Figure 2) to several Eskimo hunters. Painting was alien to them, but visual punning was not: they showed the craftsman's appreciation of skillful work.

FIGURE 2

Visual punning is immensely popular in certain preliterate cultures (e.g., Figures 3, 4). It was practiced by Surrealists and is employed occasionally in advertising and in Pop Art (Figure 5). A number of books for children are punning exercises, including one where the puns are simultaneously visual and verbal. A comic strip series in the *New York Herald*, 1903–1905, was designed to be viewed from left to right, then turned upside down to finish (Figure 6). In a recent French film, the camera closes in on a traffic sign reading *Danger*, until it reads *ange*, and separates *Passage* into *Pas sage*.

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 8

Variation

Visual puns vary greatly, but all share one characteristic: each line simultaneously serves two or more images.

A figure may be shown in several roles. Figure 7, an Eskimo knife handle, affords a simple illustration: seen one way the caribou grazes, head lowered; turned 90° counter-clockwise, the caribou stands head up, watchful.

A figure may contain several forms. Figure 8, an Eskimo carving *circa* A.D. 1300, simultaneously represents a man in a hooded coat and a dog, or phrased another way, a dog-man, perhaps the one figuring widely in Eskimo tales.

Figure 9, from a 14th-century French manuscript, depends for its effectiveness on a verbal pun on the word *instrument*. In Figure 10, the instrumentalist and lover are the same person whose activity is shown in two different ways. "The musical idea adds to the representation an element of humor as well as theological and philosophical profundity."

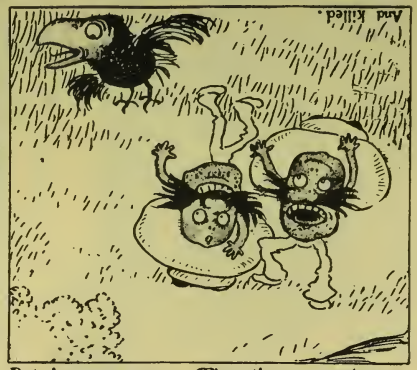
Substituting 0's for short beats and 1's for long beats in a Sanskrit nonsense word invented more than a thousand years ago as a memory aid for drummers, reveals a memory wheel for all possible triplets of 0's and 1's (Figure 11). Since the first two digits are the same as the last two, the line of ten digits can be made into a circle of eight, like a snake swallowing its tail.

FIGURE 7

THE UPSIDE-DOWNS OF LITTLE LADY LOVEKINS AND OLD MAN MUFFAROO

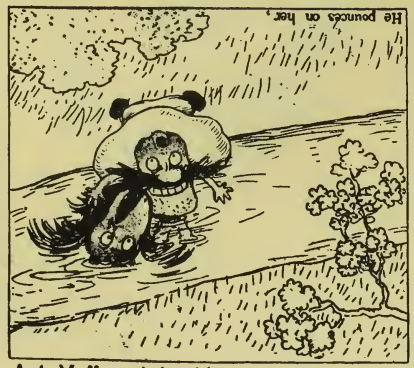
They try to catch a big fat bird.

The bird runs; they chase him,

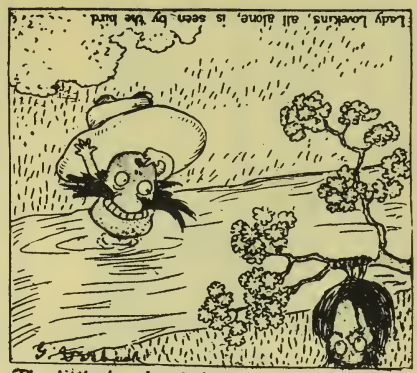


But he gets away. Then they proceed, and

Lovekins rescues a little, long-haired boy.



And Muffaroo helps him across the river.



The little boy is glad to be safe on shore.

FIGURE 6

FIGURE 9

FIGURE 10

This in turn can be translated into a maze that provides the solution to a complex mathematical problem.

These are simple illustrations. Most puns aren't simple. Preliterate peoples often integrate grammars we conceptually separate: poetry, navigation, music, astronomy, art, dreams, speech, etc. The visual aspect is often only part of a pattern involving several senses. Moreover, the sheer technical challenge of producing visual puns probably spurs artists to efforts of great complexity.

And this without mentioning cryptographs, gematria, etc. Altogether the variety is immense and bewildering. Soon we find ourselves turning back to the duck-rabbit where the problem seemed simple and conclusions possible. But the very simplicity of that illustration, which makes conclusions about it easier, may be misleading.

Consider the Eskimo mobile illustrated in Figure 12. Instead of representing a mythical figure, it represents an entire myth in which a swan drives white whales toward hunters.

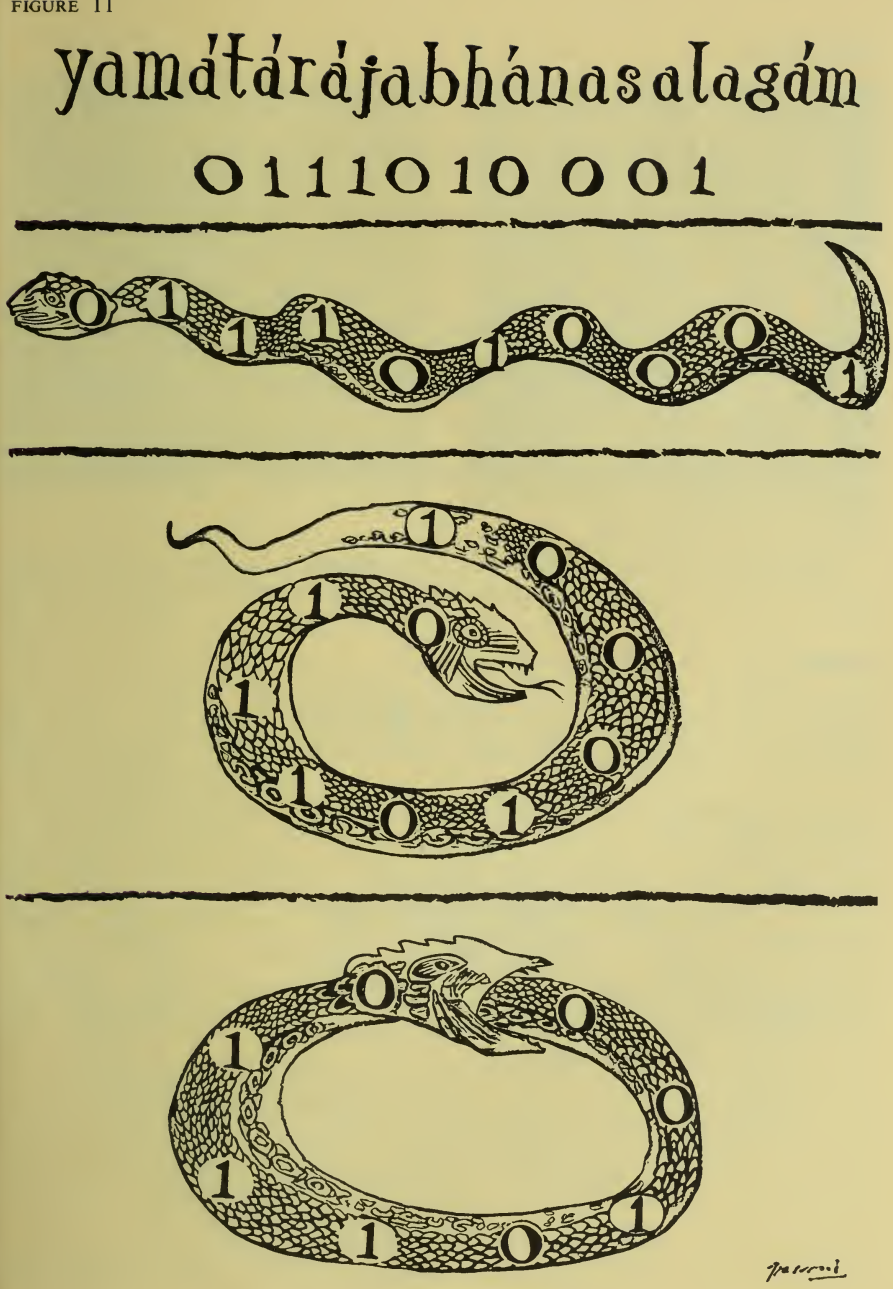
Though we may call Figure 13 a "composite" mask and think of it as an assemblage of parts, with the "soul" *added* as an eye; there is no reason to believe that Eskimo saw it, or Figure 14, as anything but organic wholes.

FIGURE 12

FIGURE 13

FIGURE 14

FIGURE 11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Non-punsters

Literate man not only fails to create visual puns, he suspects the worst of those who do. The art critic Crevel, commenting on Dali's puns, says, "It is by a frankly paranoiac process that it is possible to obtain a double image, that is to say, the presentation of an object which, without the slightest figurative or anatomical modification, is at the same time the representation of another, absolutely different object, likewise free of any kind of deformatory or abnormality that might conceal some arrangement."

The trouble with this quotation is that psychotics don't produce double images. Nor do children. I say this with confidence because I have gone to some effort, aided by the National Institute of Mental Health, in collaboration with Dr. Jerome Richfield, to search for visual puns in the work of psychotics and children. I have yet to find one.

Children are exposed to visual puns—drawings of animals "hidden" in foliage; clowns who smile when seen from here, frown when turned upside down—but children themselves don't create such images. They enjoy them, but they don't make them.

Occasionally a child weaves words into a picture to convey relevant sounds, e.g., the word HELLO serving as teeth in a portrait. More frequently, printed

FIGURE 15

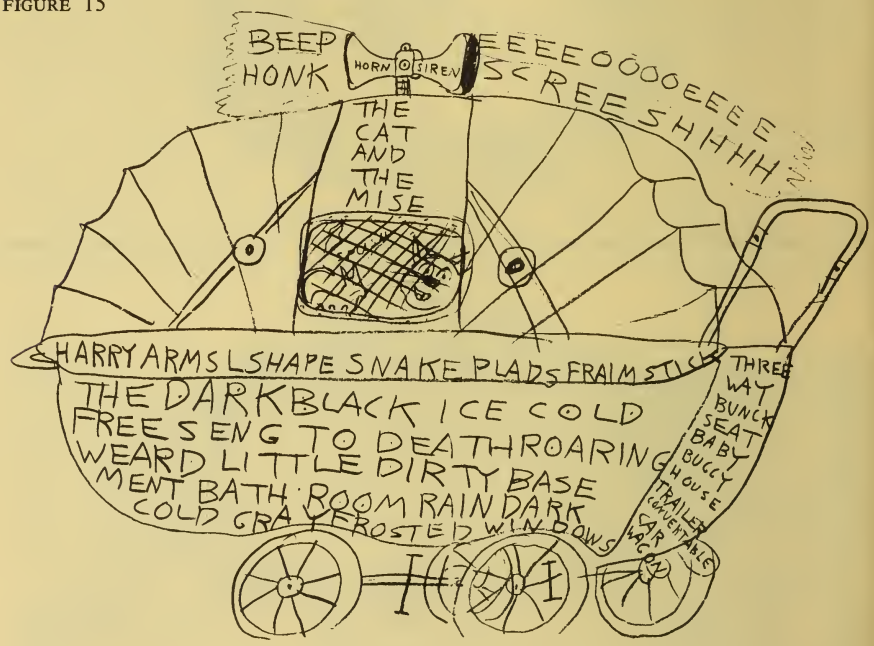


FIGURE 16

FIGURE 17

words provide a verbal element while "filling in" a visual design, e.g., Figure 15, made by a 14-year-old catatonic.

Accidental Puns

Visual puns rarely occur accidentally. The outline drawing of a hand, Figure 16, can be either a right hand seen from the front or a left hand seen from the back, though the distinction is probably irrelevant. Madison Avenue, unknowingly perhaps, has created ads with dual interpretations, one being pornographic.

But sight provides far fewer opportunities than sound for accidental punning. Sounds often have multiple meanings, e.g., *sole*: alone, fish, lower surface; *soul*: spirit. Hence speech contains accidental puns. Context, word-order, and spelling help resolve such ambiguity. But if a mental patient rejects literature codifications, and in certain cases this is precisely what he does reject, then the possibilities for uncontrolled ambiguity are greatly increased. It is the absence of patterning, in contrast to deliberate patterning, which characterizes the following poem by a young psychotic:

seven keys—
which the pupil and the teacher sees.
as you can see
A B E D, or maybe middle C—
or sometimes—
lower G and C.

"Art, being bartender, is never drunk."

Punsters

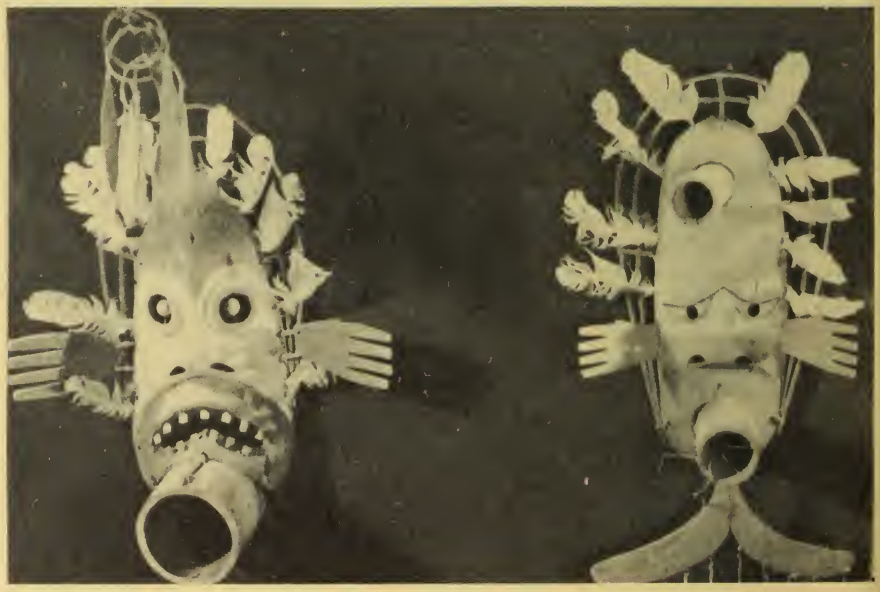
Visual puns are sophisticated images designed by and for people who codify experiences into implosive patterns. They aren't the scribblings of children or madmen. They don't belong in philosophical seminars or psychology labs. Nor are they simple gimmicks exploiting what Wittgenstein calls "surprise". All efforts to appreciate them, or to produce them, by means of abstract, fragmenting analysis ignore their fundamental nature.

For fifteen years I regularly assigned to large classes of students the task of creating original visual puns, and asked each student to keep a diary of his effort. With rare, rare exceptions, each student started with a separate image, then made it into two unrelated images, either by superimposing a second one or by modifying the first. The diaries were documents of frustration; the puns were artistic failures.

In contrast, an Eskimo carver, having "discovered" a visual pun in the unworked ivory, releases it without hesitation. Pun-images appear as dream visitors and, in thanks for services rendered, the dreamer executes them as mobiles (Figures 17, 18).

Such puns are implosive, like dreams and myths. An Eskimo myth may include cause and effect in a single statement, the way the fuel of a missile is the engine and the engine the fuel. Entire Eskimo societies are implosive: every-

FIGURE 18



body is involved with everybody simultaneously and instantaneously. There is no isolating "individualism" and no emphasis upon isolation of sight from other senses. Nor is there the same emphasis literate man makes to abstract single visual images, one at a time, from the dynamic flux of experience. This emphasis, which is both the mark and strength of literate man, is achieved at the price of muted sensory awareness (except sight) and shattered sensory orchestration.

Sensory Awareness

One of the most interesting conflicts in contemporary anthropology arises from the increasing number of books by *native* authors, voices from the inside. These intruders into the *visually*-oriented profession of anthropology are always writing about how things smell, taste, feel, sound; toes gripping roots along a slippery bank; peppery food burning the rectum; ". . . he became aware of gentle heat playing on his right cheek, and a fine smoke teasing his nostrils; while on the left he heard an odd gurgling sound. . . ." One sensory image after another.

Anthropologists, most of whom are 19th century in outlook, don't know what to do with such data: they can't fit them into their *visual* models; they don't know how to translate odors or sounds into numbers; they can't even arrange them into sequences that lead somewhere, because these data just won't fall in line. So they put them into a new category: Native Autobiographical Reports.

One cannot read these inside reports, with their descriptions of sensory awareness and involvement, without realizing how misleading the traditional, outside "observations" have been.

Not long ago, when some British children were asked, "What are the twelve loveliest things you know?", one boy answered:

"The cold of ice cream.
The scrunch of dry leaves.
The feel of clean cloze.
Water running into a bath.
Cool wind on a hot day.
Climbing up a hill, looking down.
Hot water bottle in bed.
Honey in your mouth.
Smell in a drug store.
Babies smiling.
The feeling inside when you sing.
Baby kittens."

A girl's list went like this:

"Our dog's eyes.
Street lights on the river.

Wet stones.
The smell of rain.
An organ playing.
Red roofs in trees.
Smoke rising.
Rain on your cheeks.
The smell of cut grass.
Red velvet.
The smell of picnic teas.
The moon in clouds.

These phrases do not contain a single word in a list of the ten most beautiful words in the English language suggested thirty years ago by Wilfred Funk, the eminent wordsmith.

Around 1900, Enos Mills, a mountain guide, became snow-blind in the Rockies at 12,000 feet. "My faculties", he reports, "were intensely awake." He could not use trails because of the depth of snow. Carrying a long staff, he set out on snowshoes to find the blaze marks on trees, which he had made on his forward journey. Making his way from tree to tree he thrust an arm into the snow, feeling the bark of the trees until he discovered the mark of the blaze. He resorted to the trees for the points of the compass. In his study of tree distribution he had learned that, in this locality, canyons running east and west carried limber pines on the wall that faced south and Engelmann spruce on the wall that faced north. With limber pines on his left and Engelmann spruces on his right he was now satisfied that he was traveling eastward and should be on the eastern side of the range. To check this, he examined the lichen growth of low-lying boulders and the moss which encircled the trunks of trees, concluding that the surrounding area must be such as to admit light freely from all quarters. To get an idea of the topography of the canyon he shouted, noting from which direction the echoes came, their intensity and the cross replies—concluding from these that he was going into the head of a deep forest-walled canyon. In the night a snowslide almost smothered him as he made his way and progress was made more difficult by the enormous rock masses and entanglements of fallen branches and leaves. Suddenly he caught the scent of smoke, which he recognized as that of aspen, a wood burned in the cookstoves of the mountain people. Under favorable conditions a person with a keen sense of smell can detect aspen wood smoke for a distance of two or three miles. Going forward in the direction from which the wind was blowing, he emerged from the woods where the smoke was strongest and knew that human habitation was near. In fear of passing it, he stopped to use his ears. As he stood listening, a little girl gently, curiously asked: "Are you going to stay here tonight?"

Sensory Orchestration

A child learns to separate senses when he learns, in class, to read silently. His legs twist, he bites his tongue, but by an enormous *tour de force* he learns to fragment his senses, to turn on one at a time and keep the others in neutral. And so he is indoctrinated into that world where readers seek silent solitude, concert-goers close their eyes, and gallery guards warn, "Do Not Touch."

All this is alien to Eskimo experience. Once, with visibility zero, I traveled rapidly along a dangerous coastline, guided by an Eskimo who navigated by the feel of wind and smell of fog, by sounds of surf and nesting birds, and particularly by the feel of the pattern of waves and current against his buttocks.

With such interplay and interpenetration of senses, there can be no isolation of one sense.

Recently an experimenter, comparing paintings by blind children with those by seeing children, found the two indistinguishable until the age of six, at which point the seeing children, being members of a literate culture, moved in the direction of optical imagery.

A dreamer watches the dream in sleep, by moving his eyes.

Patients who have undergone throat surgery are forbidden to read, for there is a natural tendency for a reader to evoke absent sounds, and his throat muscles work silently as he scans the page.

Nothing was more alien to medievalism than silent reading. Reading was aloud, often as song, with gestures. Physicians prescribed reading as a form of exercise. Carrels were like telephone booths, designed to keep down noise.

Interplay and interpenetration of senses offer entrance into realities that cannot be found by way of a single sense. Infants born without arms and legs cannot see in depth. Depth must first be discovered tactually before it can be recognized visually.

Literate Man as "Private Eye"

Phonetic writing translated the multi-sensuous thing that is spoken language, into one sense only. The peculiar effect of translating the many senses of the spoken word into the visual mode of writing was to abstract one sense from the cluster of human senses.

The phonetic alphabet and all its derivatives stressed a one-thing-at-a-time analytic awareness in perception. This intensity of analysis was achieved at the price of forcing all else in the field of perception into the subliminal.

Literacy ushered man into the world of divided senses. The value accorded the eye at the expense of all other senses destroyed harmonic orchestration of the senses, and led to emphasis upon the individual experience of the individual sense. It created a hierarchy of senses with sight highest, touch lowest. Aristotle, in the first sentence of *Metaphysics*, says of all the senses, trust only sight.

This bias makes no sense apart from literacy. Plato regarded touch as the lowest sense, but do lovers?

It took 2,500 years, aided by Gutenberg and the entire educational establishment, to enthrone sight. It was a much contested ascension, but literacy won and its analytical bias permeated every aspect of society.

Print was highly explosive; it created shrapnel. By focusing on a single, cut-out factor, abstracting it, examining it, print shattered experience into segments, fragmenting the field of perception and breaking movement into static bits.

Symbolization

The conception of the symbol as something distinct from, and applicable to, that which it "*re*-presents", is possible because of a mode of thinking in which it is thought desirable to abstract elements from a total situation, and to separate form from substance. This conception is not common outside literate cultures.

Consider the case of Akiga, a Nigerian Tiv with a Western education, who returned home skeptical of reports of magical killings. "At one time he heard that his father had killed one of Akiga's many sisters, and given her skin to her brother on the occasion of a special ceremonial dance. Akiga went to the dance to see what would happen, and there he saw his brother dancing, holding a woman's filter and his father's pipe. The following day, the people who had gone to the dance were full of the story of how Hilehaan had danced in his sister's skin. They were not trying to deceive anyone; they were talking among themselves, discussing the important event they had witnessed. They had obviously perceived the-skin-of-Hilehaan's-sister (in the filter) who-had-been-flayed-by-her-father (in the father's pipe). Only the Western-minded Akiga saw just a filter and a pipe."

Verticality

Literate man, observing a pun, first recognizes only the image vertically rendered relative to himself. Encouraged to find additional forms, he turns the piece until each image successively reveals itself.

This is far from universal. The value we place on verticality stems from the strength of literacy in our lives. Children must be taught it. Natives do not know it. And when the mentally ill in our society withdraw from the burdens of literate values and in their art work begin once more to render images non-vertically, we call them child-like and even note parallels with preliterates.

Literate examples of non-verticality are mere jests. Thurber's NOW NO SWIMS ON MON reads the same upside down. Mozart and Bach sometimes combined an inversion with a retrograde or crab motion to produce a melody played by two players from opposite sides of the sheet.

But these are rare exceptions, in marked contrast to the frequency with which preliterate artists rendered images non-vertically. Eskimo carvings (not to be confused with stone, souvenir carvings) won't stand up. Each lacks a favored point of view and hence a base. When walrus tusks are carved into aggregates of connected but unrelated figures, some figures face one way, others another. When handed a photograph, Eskimos examine it as it is handed to them, no matter how it is oriented.

Two areas where visual puns were most common, Bering Strait and New Guinea, are areas where, not incidentally, non-verticality in art is common. Images aren't rendered *in relation to the viewer.* Point of view isn't stressed, especially the private point of view which gives rise to three dimensional perspective.

Point of View

One may describe the alteration from duck to rabbit like a perception, as if the object had altered before one's eyes. But what altered wasn't the picture, but the observer's impression of it, his point of view, his emphasis upon one organization over another.

Suppose, however, he has no "point of view", or more accurately, none resembling the private, delimiting one of literate man. Suppose his art, his language, everything in his culture, deny a private point of view and stress, instead, group awareness, with many points of view simultaneously presented. Suppose, finally, he is capable of grasping such a multi-level pattern instantaneously, with total awareness, no delay, no suppression, all senses simultaneously involved.

Suppose all this and you have gone a long way toward describing an Eskimo, a man who has no private point of view because he doesn't conceive of himself as a "point" nor "view" experience.

Self-concepts

The Eskimo conceives of himself as an amorphous form, with several names, containing multitudes, in constant flux, part of a dynamic universe. Carvers depict these elements together, simultaneously, and accept in the most casual way a blurring of human-animal-spirit forms.

Northwest Coast Indian masks often depict succession or metamorphosis of forms: Wolf suddenly opens, revealing Bear. But Eskimo masks depict all elements simultaneously. One element may be emphasized, but the others are never concealed. One does not exclude the other, nor contradict it. Therefore there is no shape-shifting.

Emphasis upon one form over another doesn't prevent simultaneous recognition of the other form.

Matching vs. Making Images

It is sometimes supposed that Greek artists were the first to match nature optically and that preliterate artists produced images rather than reproduced natural ones. Yet prehistoric Eskimo carvings of birds are often so detailed, so accurate, one can identify species, even sub-species: a Common Loon from a Red-throated Loon from the angle of the neck. These co-existed with visual puns.

It has also been suggested that Eskimo mobiles originated from necessity, due to the absence of large pieces of wood and bone. However, mobiles co-existed with large masks made from single pieces of wood.

So the existence of visual puns among the Eskimo cannot be explained on the basis of paucity of ability or materials. Their existence and form were artistic decisions.

Insufficiency of Contemporary Aestheticians

It is difficult to read Wittgenstein and Gombrich without concluding that they regarded their own manner of perceiving as characteristic of man generally. Yet this manner of perceiving is neither universal nor intuitive, but arises from conditions unique to literacy.

The Role of the University in Canadian-American Relations

Claude Bissell

When one surveys the relationship of Canada and the United States, the obvious role of the university, as the crowning achievement of any national system of education, is to clarify and to deepen the understanding of each country for another. And yet this basic role is not being played effectively by the universities of either country. The main reason for this is that we take understanding for granted and refuse to acknowledge the existence of problems of understanding. We are, after all, friends and associates by natural temperament and by historical necessity. One recalls the eloquent words of John Kennedy in his address before members of the two Houses of Parliament in Ottawa on May 17th, 1961:

"Geography has made us neighbours; history has made us friends; economics has made us partners; and necessity has made us allies."

And yet the fascinating report on United States-Canadian relations issued last year by a group of Congressmen under the chairmanship of Mr. Stanley R. Tupper of Maine, began with a sweeping statement that "The greatest single deterrent to a new maturity in United States-Canadian affairs is an appalling ignorance about Canada in America". I am not so sure that if a similar report were issued by a group of conscientious Canadians they would not begin with a statement to the effect that the greatest single deterrent to a new maturity in Canadian-United States affairs is an appalling ignorance about America in Canada. In part this is a problem of overcoming the disadvantages of our advantages. We are constantly up against the barrier of a common language (not to mention common TV programmes) and we must constantly cut through the fog that arises from the reiteration of platitudes and the assertion of good intentions. Stephen Leacock summed up, with a wry wit, the kind of context in which Canadian-American relations are usually discussed:

That brings me to the Americans! There's another reason for not wanting to leave Canada for England. I'd hate to be so far away from the United States. You see, with us it's second nature, part of our lives, to be near them. Every Sunday

This article is slightly condensed from an address the President of the University delivered to the Canadian Society of Los Angeles.

President Claude Bissell at a Simcoe Hall Press Conference

morning we read the New York funny papers, and all week we read about politics in Alabama and Louisiana, and whether they caught the bandits that stole the vault of the national bank, and —well, you know American news—there's no other like it. And the Americans come-and-go up here, and we go-and-come down there, and they're educated just as we are and know all about kilowatts and quit Latin at the fourth declension.

Their colleges are like ours and their clubs are like ours and their hotels are like ours and Rotaries and Lions and Kiwanis like ours. Honestly, you can't tell where you are unless you happen to get into a British Empire Society; and anyway, they have those in Boston and in Providence, and the Daughters of the American Revolution is practically a British organization—so that all is fifty-fifty.

Our students go and play hockey with their stoodents and our tourists going out meet their towrists coming in. The Americans come up here and admire us for the way we hang criminals. They sit in our club and say, 'You certainly do hang them, don't you!' My! They'd like to hang a few! The day may be coming when they will. Meantime, we like to hang people to make the Americans sit up.

And in the same way we admire the Americans for the way they shovel up mountains and shift river-courses and throw the map all round the place. We sit in the club, fascinated, and listen to an American saying, 'The proposal is to dam up the Arkansas River and make it run backwards over the Rockies'. That's the stuff! That's conversation.

The Tupper Report begins with a number of specific suggestions as to how procedures could be developed in the universities that would lead to identification and discussion of basic problems. They recommend an extensive system of exchange programmes among students, especially at the graduate school level, and they recommend that the United States Government should make every effort to utilize the existing programmes of aid to facilitate the growth of Canadian study programmes in United States colleges and universities. They give as examples such developments as the University of Rochester Canadian Studies Programme, the Duke University Commonwealth Studies Center and the development of the Center at the University of Maine, specializing in the affairs of New England and the Atlantic Provinces. If a Canadian committee were looking at similar recommendations they would not emphasize the need for an increased movement of Canadian students to the United States, since this is of course, already a major trend. But I think they could make the second recommendation with equal fervour from the Canadian point of view. It is usually assumed that Canadians are well-informed about America. One recalls the epigram that Canadians are malevolently well-informed about the United States and Americans are benevolently ill-informed about Canada. But like most epigrams it is not really true. Canadians are, of course, exposed to a mass of American trivia, but our serious and considered studies of American politics and culture tend to be restricted to short conferences at which the current irritations are discussed and the current grievance voiced. Although there have been changes in recent years in Canadian university curricula, so as to give some proper emphasis to studies in American literature, history and economics, still I would say that there

has been no widespread and concerted recognition of the Canadian obligation to know fully and sympathetically the great nation with which we must live in close association. I know, for instance, of no first class historical study by a Canadian scholar of an American theme. In our cultural development we look across the water to Europe. We have not really accepted this continent as our rightful home; and as long as we fail to do this, we shall suffer from the schizophrenia that arrests our maturity. We have, none the less, done more for American studies than Americans have done for Canadian studies. I sometimes think that American universities with rich resources of Canadian material still prefer to set up institutes for the study of Tibet rather than for the study of Canada. But if we are more advanced, we have enormously more compelling reasons for taking action, for American influences on Canada are so omnipresent and so overwhelming that it would be an act of calculated myopia to ignore them.

Structures by which universities can contribute to the understanding between Canada and the United States must rest on the presence in each country in large numbers of citizens, or former citizens, or the children of former citizens from the other country. To the intermingling of the Canadian-American peoples which has gone on since the beginning of settlements on this continent, there has been no obstruction. Movements of population have taken place on a continental basis, largely oblivious of national boundaries and of national allegiances. In the early stages, one tends to forget that the movement was largely northward from what is now the United States to the Maritimes and to Upper Canada, a movement largely motivated by a desire to find new and cheap land. But with the opening up of the vast western hinterland, the movement was reversed, and for many decades there have been far more Canadians in the United States than Americans in Canada. The Dominion Statistician reported in 1937 that "If we count all of Canadian stock, perhaps a third of us are south of the line, while certainly not more than one per cent of Americans are north". If the population movements during the 18th and 19th centuries were largely in response to a desire for land, in this century the movements have been in response to a hunger for opportunity; this has meant increasing emphasis in the exchange of the two peoples on those of professional qualifications, usually with a university degree. Here again the movement southward has been greater than northward. But Canada has not always been on the giving side. One thinks for instance of two Americans who became dominating figures in the making of modern Canada—C. D. Howe in the transformation of the economy, and Dr. Wilder Penfield in medical research. On a somewhat less elevated plane, there has been a rough balance between the American search for Canadian right-wingers and the Canadian pursuit of American quarterbacks!

In this exchange of professional people, the universities are key institutions. They educate the lawyers,

the doctors, the nurses, the engineers, the writers, the clergymen who move across the border, and, in their own search for staff, they move in as quickly on Toronto as they do on Stanford. The healthiness of the exchange depends upon the maintenance of a relative equality between the educational systems of the two countries. There has never been a question, of course, of a quantitative equality, nor would any Canadian, except in a mood of reckless chauvinism, suggest that we had institutions that are on a par with, say, Harvard or Cal. Tech. But a general parity between the two educational systems has been accepted. Indeed, the American assessment of Canada has usually been more generous than the Canadian of the United States. Our writer has observed that "Americans cherished a kind of romantic notion that Canada was unspoiled, and that education, home background and morals there were more solid, and produced more dependable employees than did their counterparts in the United States".

But if we look today realistically at the accomplishments of the two countries in education, there are doubts as to whether we are justified in assuming parity. Canadians have just had some rough facts placed before them in the Second Annual Review of the Economic Council, a federal body concerned with national assessment. The Report is subtitled "Towards Sustained and Balanced Economic Growth". There are reassuring signs of buoyancy in the economy, but there are also arresting signs of a failure to maintain the kind of growth that exists across the border. This gap, the dimensions of which are indicated by the fact that in 1964 the average income in Canada was 25 per cent below that in the United States, is to a large extent attributable, so the Report argues, to the great difference in educational opportunities in the two countries. The gap appears to have widened, particularly at the secondary school level, in the interwar years, and particularly at the university level in the post-war period. A comparison of the educational attainments of members of the male labour force in the two countries is the quickest way to underline this disparity of growth. Those between the ages of 25 and 34 with a university degree, made up 6 per cent of the Canadian labour force, and almost 15 per cent of the American. For those between the ages of 55 and 64, the comparable percentages are 4.2 and 7, so that if anything, the differential has been widening.

Now, what about qualitative differences? I think that the Canadian undergraduate record is being maintained and that, indeed, in many Canadian universities, particularly those with well-developed Honours Course programmes, undergraduate achievement is outstanding. But the Canadian university has been far slower than the American to respond to the obligations of the university to train students at advanced level, to undertake systematic research, and to relate knowledge to the needs of society. In the United States the Graduate School was eagerly adapted from German models in the late 19th

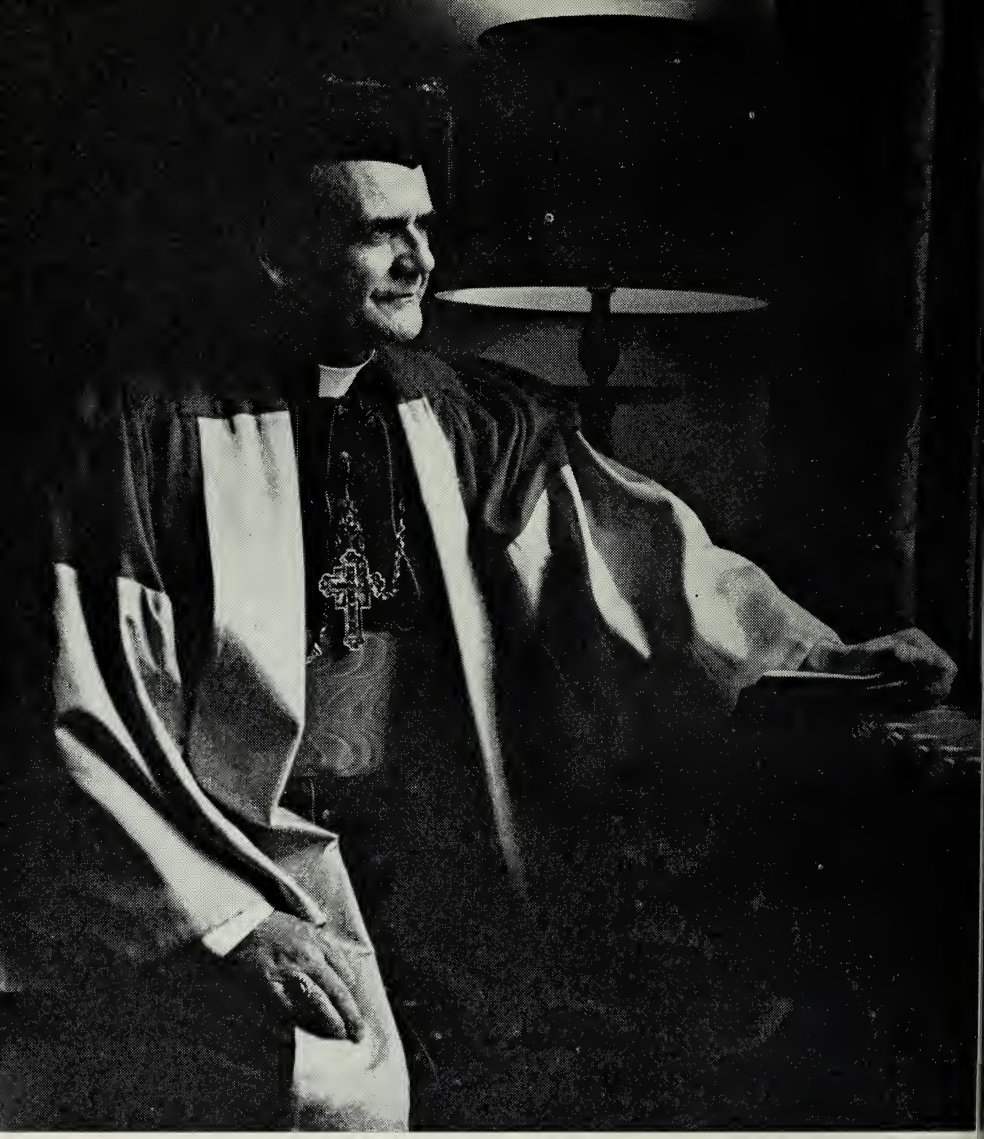
Century, and has become increasingly the great scholarly mark of the major American university. Especially since the end of the Second World War, the American universities have addressed themselves systematically and adventurously to research, and in this they have received support on a mounting scale from the Federal Government. The professional schools, particularly in Business, Law, and Engineering, have grown in size and in prestige, and if they seem, at times, to have threatened the academic integrity of the university, they have none the less been towering bridges between the academic world and the world of affairs. The increasingly adventurous and exploratory nature of the American professional school may well account for some of the enormous gains in American productivity in recent years, just as the comparative caution of our own institutions may account for some of the sluggishness in Canadian economic development. The Report of the Economic Council emphasizes this in its comment that "there is increasing recognition and concern about the need for a higher educational level for future management in Canadian business firms as the basis for more aggressive and imaginative approaches to risk taking in relation to product development and marketing".

Now these disparities in the educational achievement of the two countries, which can be carefully documented quantitatively, and estimated qualitatively, would in a very short term have disastrous implications for the relations between the two countries. Many of our first-class people would continue to go south of the border, indeed, in ever increasing numbers. But we would be able to attract only the second-rate, and no increase in their numbers would compensate for the loss of our best minds. There would be a tremendous imbalance in quality. I can think of no better way for Canada to revert to a status of colonial dependence, which would be no less real for the possession of political independence.

I have struck a sombre note, because the facts are sombre, and their possible implications even more so. But I am, nevertheless, sanguine. Canadians move slowly, but when they are aroused they move with remarkable speed. Someone suggested recently that our way of life is "puritanism touched by orgy". Our history is a record of stolidity broken by bold imaginativeness. As we prepare to enter the hundredth year of our establishment as a united nation, I predict that the dominating theme will be education. The signs are bracingly encouraging. On the provincial level, where the responsibility for education primarily lies, there has been a great re-awakening and a radical assignment of priority. This is certainly true of the Province of Ontario, where the educational traditions have been strong and vibrant, and where the demands for the new age are of sweepingly revolutionary nature. Certainly the placing of education in the first priority is the real key to the Quebec revolution, not these occasional outbreaks of violence that attract attention in the press.

Quebec is in the process of changing from an authoritarian elite system of education to a democratic, equalitarian one, and the beneficial import both for the Province and the rest of Canada will be incalculable. Now on the Federal front, after a good beginning in the 50s followed by a long period of inactivity, we are on the verge of a great change—not, perhaps, an orgy, but certainly an outbreak of imaginative adventurousness. Authoritative birds have been dispatched from the Ark to assure us that the waters of apathy will soon recede. The needs, particularly in research and graduate work, have reached mountainous proportions, but, given the resources, the universities can see that they are met. There is good reason to believe that the parity between Canada and the United States, as it pertains to educational institutions, will return and with far greater basis in fact.

There is no greater inducement to growth and development among Canadian universities than their proximity to the American scene. The American achievement in Higher Education is one of the great cultural forces of the modern world. An index of this is the changing attitude of the British towards American Higher Education. Years ago it was customary for the British to make small, stale jokes about the absurd courses that could be found in obscure American universities. Then came the realization that at least the United States was attempting to introduce as many people as possible to the life of the mind. A prominent British academic observed "It is difficult to overstate the advantages which the United States derives from the fact that so many people have had the smell of a university". There is an air of condescension in that remark, but not in more recent remarks, as in this one by Lord Robbins, the Chairman of the Commission which recently produced the study of Higher Education in the United Kingdom, to the effect that the Americans having tackled the quantitative problem first, have gone on to solve the qualitative problem by building up the great Graduate School. "Only an ass", he adds, "will take them lightly". Nowhere is the American commitment to education more dramatically and successfully demonstrated than in the State of California, where a great multi-campus State university is surrounded by a company of complementary institutions, and where, at the same time, private institutions of international fame exist and flourish. In education, as in other areas, Canadians will not follow American practice with uncritical enthusiasm, but we shall not strive for distinctiveness by the deliberate cultivation of opposition. Our strength lies not in massive emulation, but in selective strengthening, not in seeking for procedural equivalents, but in building on our own traditions and, occasionally, on our own prejudices. A strong Canadian educational system, particularly at the university level, is the best way to deepen and strengthen understanding between the two countries, and the surest way to maintain our identity and our honoured place in the community of nations.



His Eminence Paul Emile Cardinal Léger, LL.D. (Toronto)

This portrait of Cardinal Léger was made in the Chancellor's Room by Bob Lansdale shortly before the degree of Doctor of Laws, *honoris causa*, was conferred on the distinguished Canadian prelate near the close of last academic year.

Some Memories Of Harold Innis

George V. Ferguson

Some thirty years ago, at a joint meeting of the Historical and Political Science Associations at Queen's University, Professor Frank Underhill had delivered a biting and sarcastic address about the failings and the frailties of the members of those two disciplines. He referred to the economists and the political scientists of Canada as the back-room mechanics of the capitalist system: and when he got around to his colleagues in the Historical Society, his judgment was that they were the front-office white-collar boys in the same racket: that while they did not do the dirty work in the shop, giving the capitalists some dreamed-up reasons for what they were up to, the historians were just as busy, selling the bill of goods to an unsuspecting public.

He sat down amid genial applause, and a tall, gaunt, austere character rose from his seat near the front of the hall. I had never laid eyes on him before. I found out, at the end of the meeting, that he was a man called Innis from the University of Toronto. He excoriated Underhill. He began by denying the sweeping nature of Underhill's charges. He continued, on more general lines, to lay down the general principle that scholars should avoid, at all costs, close association with either government or political parties. The value of the academic in society, he said very simply, was to play the role, or rather to assume the function, of the objective critic. If he did not do so, he said, the academic was lost, and his value to society similarly dissipated.

☆ ☆ ☆

When war broke out, and academics flocked to Ottawa to perform roles in the multitude of war-time agencies that were set up, Harold Innis refused to go. When he heard that associates and colleagues had gone, he used to tell me with brutal frankness that, as far as he was concerned, they had diminished themselves in this form of service.

Years after the war, when the demand arose for men to go abroad to serve in the many Allied and United Nations' agencies that were set up, he was equally caustic. On one occasion, discussing an economist who had gone abroad to help one of these agencies, he remarked: "It is a sad thing to think that all those people, who have suffered so much, are now going to

have their affairs run by a second-rate Canadian economist."

His first thought, for most of his life, was dedicated to his own country. If Canada was ever to play a substantial role either at home or abroad, he believed, its own standards must be maintained impeccable. The field in which standards must be rigidly maintained was his own field: the field of political and economic study. There were few enough good men, he believed. These should be kept at home to help and to instruct those who came after them.

☆ ☆ ☆

A whole generation of younger men had been led by his precept and example to work in the field of Canadian studies. This had been the great lack during his own youth—it had been a field largely unexplored. But, by the 1950's, I found that, very often, he would be pressing the idea that Canadian scholars should widen their sights; that there was, perhaps, too much emphasis on Canadian studies, that we were becoming, as it were, in-grown.

☆ ☆ ☆

He told me once that his professional life was being spent in ten year spans: the fur trade, the fisheries, then communications—and after that he wasn't sure what he would turn to next. . . . If you read his essays on communications—they are no more than that—you will note that the developing technology on which he based his tentative findings was moving so fast that it had become almost impossible to keep up. . . . What he had to say about radio and television was scanty compared with what he had to say about the printed word which he was still vigorously exploring when he died.

☆ ☆ ☆

Harold Innis believed profoundly that the best tradition civilization had developed was the oral tradition. He hated the scribes and the pharisees, the upholders of the written word. My wife and I, with Harold Innis, went to a funeral together once and I talked afterwards about the glory of language in St. Paul's epistle to the Corinthians, read so often on such occasions: "The sting of death is sin, and the strength of sin is the law." We said how glorious the language was, yet how incomprehensible—why should law be the strength of sin? What did it mean? He gave us that amazingly innocent look of his and said: "But you know what Paul was saying—that once truth is embodied in the printed word—that is, in law—it becomes restricted, subject to interpretation by lesser men, and, ultimately, false."

It was one of those illuminating insights that great men impart, and

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This article consists of excerpts from an address by George V. Ferguson, Editor-in-Chief of the *Montreal Star* at the 1965 Innis College Dinner. It was the second such occasion since Innis College opened its doors to 235 first year students in September 1964. Now there are 321 students. "A solution is imminent", in the words of President Bissell, to the location and form of permanent quarters for the College.

HAROLD INNIS

Harold Innis was a great man and a great teacher. His own written word is the prime example of what I mean, for, basically, he despised the written word, and his own writing was a curious kind of shorthand that needed its own special interpreters.

☆ ☆ ☆

I never attended any class of Innis's. I can imagine that, particularly in his later years, he must have resented their size. He despised, for instance, the microphone, and was therefore often, I'm told, inaudible. But his seminars, in small groups of men and women, must have been exciting experiences which his able students would remember all their lives. This, I imagine, must be his chief legacy. All over Canada there must be men and women today who sat in those small classes and learned, perhaps for the first time, what a critical and astringent mind could do for them. And the lucky ones, to this day, will retain some of that critical and astringent quality themselves and pass it on to others. A rare and wonderful quality, possessed only by the handful of very great teachers. How lucky young men and women are to come into contact with any of them.

PROGRESS REPORT ON A SCHOLAR AND A CHAMPION

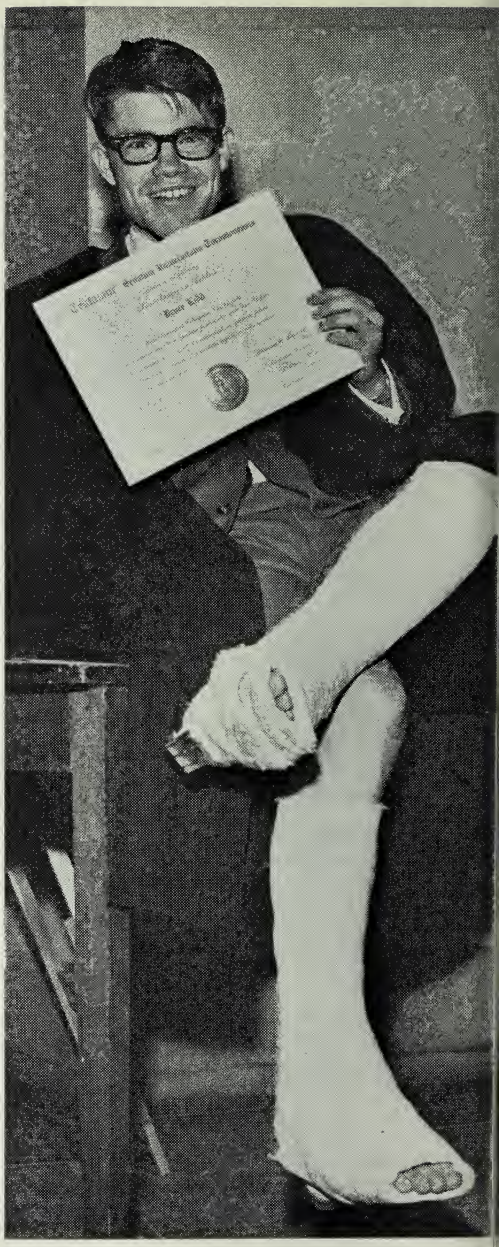
Bruce Kidd has made progress since he graduated last June with a B.A. in Political Science & Economics (with first class honours) and the Breuls Gold Medal:
¶The casts are off. No word yet about running in competition—but he plays cricket!
¶He has a job. It's in Jaipur, India, teaching English at the all-male Maharaja College of the University of Rajasthan. His salary works out at about $45 a month.

In letters to friends Bruce remains his ebullient self:
e.g., "Weather is the only dull part of life: monkeys, peacocks, cows (sacred & other), bullock carts and bicycles are constant hazards on the roads";
e.g., "Wedding ceremonies last three days; they've been cut down from a week by government order".

About Iran, which he touched on the way to India: "Persians are the only Muslims to serve alcohol in their restaurants, but they cover up their women: you can't win."

Bruce leaves for home in May, coming via Japan, Russia on the Trans-Siberian Railway, Scandinavia, Europe, and London where with Peter Snell he calls on the Queen to send a message to the Games in Jamaica.

Next year it will be graduate school if one of his Canadian, British, or U.S. applications for a fellowship bears fruit.



CARRYING RADIOACTIVITY TO HIROSHIMA IS SABBATICAL PROJECT

R. E. Jervis

I HAVE BEEN GIVEN royal treatment by the academics and senior scientists here in Japan. My stay as visiting professor in the University of Tokyo, previously known as the Imperial University and considered to be the top institution in Japan, if not in all of Asia, has been sponsored by the Japan Society for the Promotion of Science, to the extent of providing my personal travel costs to Japan. This sponsorship and my official appointment with "Todai", short for Tokyo Daigaku, or Tokyo University, has accorded me a high status in my dealings in Japan.

Before my arrival I was invited to present "a distinguished special lecture" in October on my recent research at the 10th Symposium on Radiochemistry, Hiroshima University. While I was in Hiroshima I had the opportunity to tour the Atomic Peace Memorial, the Memorial Museum with its carefully documented exhibits of human remains, household articles, melted rocks and roof tiles from the atomic bomb blast—a very impressive and thought-provoking experience to view this Museum; and I also toured the Atomic Bomb Casualty Commission which has been carefully watching the health of Hiroshima survivors and their offspring for twenty years.

It seemed an unusual circumstance for me to be invited to lecture on my research with radioactivity in Hiroshima where there is such a painful memory of the devastating effects of radioactive burns and fallout. However, today there is no resentment or bitterness over the Hiroshima tragedy,

Professor Jervis, author of this article, is on sabbatical leave from the Department of Chemical Engineering at University of Toronto

Left: Professor Jervis lecturing in Japan. For the benefit of readers who do not understand Kanji, the large banner posted beside the blackboard announces: "The Development of Activation Analysis Techniques and Application to Crime Detection by Dr. R. E. Jervis, University of Toronto".

except for two individuals I encountered, both of whom relaxed their antagonism when I was able to convey to them that I was from Canada, not U.S.A., and that like Japan, Canada was only striving to develop peaceful uses of atomic energy. The Japanese have almost a religious fervour in declaring this as their "pure" motive for nuclear research with implied contrast to other nations.

Early in November I was invited as guest scientist to spend most of one week at the Japan Atomic Energy Research Institute at Tokai-Mura where they have seven reactors and one accelerator operating and are developing an MTR-type reactor on an adjacent site. I was invited to lecture to their scientific staff on "Development of Systematic Ion Exchange Group Separation Procedures for Use in Instrumental Activation Analysis". I had the privilege of being present there at Tokai when they produced their first economic nuclear power at 2.15 a.m., November 10th from a Calder-Hall type power reactor plant which they largely imported from the U.K.

Also in November I spent more than a week at Kyoto participating in a nuclear and radiochemistry conference and touring the Kyoto University

chemical and radioisotope laboratories. I travelled to a distant suburb to the Kyoto University Reactor Research Institute (they feel strongly that reactors should not be installed in heavily populated areas here in Japan) and was quite impressed with the nuclear facilities assembled around a fine research reactor, a 1 MW. swimming pool facility that I could picture as being a fine type of university research unit for the University of Toronto. Here I was both surprised and flattered to find that the scientists knew of my research in Canada through papers in journals and pressed me on the spot to give a lecture providing more details of some of our findings.

Here in Tokyo I have given special lectures in the Department of Chemistry and have had extensive discussions with faculty and graduate students on research topics and on higher education policies and practices in general. I have also lectured to an academy of senior Japanese scientists, one of whom I learned introduced the first nuclear research to Japan over forty years ago after studying in Soddy's laboratory in England. I am scheduled to visit the National Institute of Radiological Sciences and lecture on: "Nuclear Activation Techniques Applied to Biological Materials".

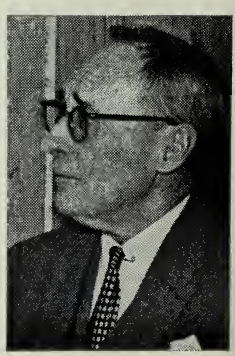
Later in my stay I have been invited to spend some time discussing research at Tohoku University, Sendai, at Nagoya Institute of Technology and other universities.

I will present invited papers to the annual conference of the Japan Atomic Energy Society in April and to the 7th Japan Conference on Radioisotopes in May. At this latter conference it is expected that there will be up to 50 or 70 other foreign participants, including some other Canadians.

Depending on the availability of travel funds I plan to visit other nuclear research centres in Asia, possibly as a part of my return journey to Canada early next summer. The tentative itinerary will include South Korea, mainland China, Hong Kong, Taiwan, Thailand, the Philippines and possibly Trombay in India if they press their invitation. I have been corresponding with authorities in Red China to try to arrange for a two-week visit to universities and research institutes to examine scientific and educational activities.

My sabbatical leave here in Asia is proving, stimulating and profitable. Contrary to the popular idea that they are "copiers", Japanese have much originality. In this respect, perhaps the communication barrier that exists between Japan and much of the rest of the world has worked to their advantage in that they have not been limited by other people's vain efforts and have made breakthroughs of their own. A testimony to this would have to be the work of Professor Tomanaga, the new Nobel prize winner in Physics who developed his theory of quantum dynamics working quite in wartime isolation from the thinking of other physicists. The professor with whom I am associated here, a senior nuclear chemist in Japan, is a colleague of Tomanaga's from the Tokyo University of Education.

Three Heads of Chemistry and Lash Miller's Daughter



Two of Professor Lash Miller's successors as head of chemistry at Varsity helped his daughter unveil Cleve Horne's portrait of him at a ceremony in the main hall of the new Lash Miller Chemical Laboratories. Dr. D. J. LeRoy, who succeeded Dr. A. R. Gordon as chairman of the department in 1960, is at left *above*. Dr. Gordon is at right *above* and *below*. The painting was a gift to the University by graduates in chemistry.

MEETING PLACE

Journal of the Royal Ontario Museum

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BATS IN MY BELFRY

SERVING THE HANDICAPPED

THE NEEDLE IN THE HAYSTACK: A DISCOVERY IN IRAN

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BATS IN MY BELFRY

The ROM *is becoming a world centre for study of these much-maligned but fascinating mammals*

R. L. Peterson, Curator of Mammalogy

THE Department of Mammalogy is located in a tower which rises above the main part of the Royal Ontario Museum building. While there is no bell in the tower, there are certainly plenty of bats, with more coming in daily from all around the world. If we have our way, our "belfry" will become the focal point of a leading world centre for bat research.

Canada has a comparatively small bat fauna, with only six genera and nine species east of Manitoba. The greatest number of bat species live near the equator, with their number diminishing as one proceeds north or south to higher latitudes. Unfortunately, bats have long been considered rather undesirable creatures. They have been regarded as symbols of doom and darkness, and associated with haunted houses and blood-thirsty horror stories in the Dracula tradition. No other group of mammals seems so shrouded in folklore, mystery and misinformation. A demented person is said to be "batty" or to have "bats in his belfry". A person with defective eyesight is said to be as "blind as a bat". A person making a hurried retreat is said to go like a "bat out of hell". Bats appear along with spooks and goblins at Hallowe'en, and are supposed to attack women and get tangled up in their hair. Some of our less desirable female citizens may be referred to as "old bats". Perhaps we shouldn't even mention Batman!

As in most similar circumstances, dislike, fear and distrust stem from unfamiliarity with the animals in question. Actually bats are a most fascinating group. No other mammal has developed the ability to fly, although several are able to glide. The bat wing is in reality a modified hand. The thumb is retained, complete with claw, as a short digit for clinging or crawling, while the fingers are greatly elongated to support the thin double layer of skin.

Many species have developed an intricate and highly effective sonar system. Though they are primarily nocturnal, and many live in the furthest recesses of caves, bats are able to fly about avoiding all objects or obstructions. For centuries they have been credited with a "sixth sense", but only since World War II has careful research with electronic equipment allowed us to begin to understand the true mechanism.

By means of a specialised larynx, bats emit pulses or "beeps" of high-frequency sound at regular intervals, usually between 20 and 60 times per second. They can vary the pulse rate at will, and each "beep" usually lasts less than one hundredth of a second (10 milliseconds). When these sounds strike an object, they are bounced back and picked up by the sensitively tuned ears or "receivers". The external ears, and perhaps the nose-leaves of certain species, act as direction finders and amplifiers. Bats not only vary the length of pulse and the pulse rate; they also can modulate or vary the frequency at will. Of the bats studied so far, the frequency usually falls between 20 and 100 kilocycles.

This echo-locating system apparently reaches its highest development among the insect-feeding bats who use it not only to navigate and avoid objects, but also to locate and "home in" on their flying prey. An insectivorous bat may cruise along hunting for food with "beeps" at intervals of 50 to 100 milliseconds at a frequency somewhere between 45 and 100 kilocycles. When a flying insect is "picked up" the pulse rate is speeded to as high as 250 beeps per second (with the interval between reduced to 5 or 6 milliseconds), the pulse duration is reduced, perhaps to 0.5 milliseconds, and the frequency drops to about 50 to 25 kilocycles as the bat zeros in on the prey. The insect may be caught in the bat's mouth; or it may be caught with the wing membrane, or the membrane between the hind legs, and held long enough to be transferred to the bat's mouth.

While all Canadian bats, and the majority of other species, feed on insects, several tropical groups have become adapted to live on other foods. At least two different species catch fish! Once I had the delightful experience of watching the large "bulldog" bats, *Noctilio leporinus*, flying low over the Abary River in British Guiana, with their greatly enlarged feet (armed with fishhook sharp claws) dragging through the water until there was a "strike". Then the feet were raised and pulled forward and the fish transferred to the bat's mouth.

Four bats from British Guiana: 1. Fish-eating bat, *Noctilio leporinus* (wing span 22 in.) 2. Moustache bat, *Chilonycteris rubiginosa* (wing span 15 in.) 3. Long-tongue bat, *Glossophaga longirostris* (wing span 11 in.) 4. Vampire bat, *Desmodus rotundas* (wing span 16 in.)

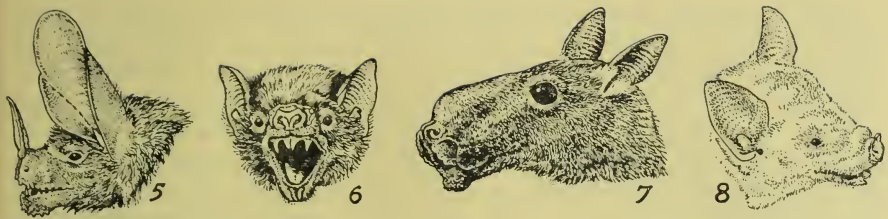
At least one species of South American bat is known to catch other bats, lizards, small mammals and perhaps birds. Among the most specialised feeders are the vampire bats. Three species, all restricted to Central and South America, exist solely on fresh blood. My first encounter with the common vampire bat, *Desmodus rotundas*, came in the summer of 1941 in Mexico when I was the assistant leader of a zoological training expedition. One night we arrived at a new campsite rather late. Since the area seemed free of mosquitoes, two of us did not take the precaution of erecting nets over our cots. The next morning we found our forearms scratched and our arms and bedding covered with dried blood. During the night we had provided meals for one or more vampires without being fully awakened. We were little concerned as at that time we were unaware that vampire bats are active carriers of rabies.

In 1961, at the Regional Virus Laboratory in Trinidad, I encountered rabid vampire bats showing a variety of symptoms. In most other mammals, this disease runs a rather short violent course ending in death. The rabid bat, however, remains an active carrier for a protracted period, spreading the virus as it feeds on other animals night after night. Some of the bitten animals are bats of other species, so while vampires are the most active carriers, all New World species may potentially spread this disease.

In British Guiana, where there is much cattle ranching on the southern Savannah, we found that bat-transmitted rabies was a serious economic as well as health problem. In one season alone it killed more than 5,000 head of cattle on the million-acre ranch which was our temporary headquarters. In our efforts to assist the rancher by collecting as many vampire bats as we could, one of our field party was bitten. This time we knew the dangers involved. We rushed the victim by air to Georgetown for antirabies shots.

In the tropics live a large number of species of fruit-eating bats. One group has become adapted to feeding on nectar, which they retrieve from flower blossoms with a long protrusile tongue; they thus parallel humming birds and bees in their eating habits. In the West Indies, a small group of "flower" bats combine nectar and pollen in their diet.

This past Christmas, I took my family to Jamaica—openly for a brief winter "vacation", covertly in hopes of finding an unusually rare species. The type specimen, discovered in 1889, had been lost, and the species now seemed to be known only by a single animal preserved in alcohol and a few fossil bone fragments. I was also most anxious to obtain examples of a particular species in the family *Natalidae*. It had not been previously recorded for Jamaica, except as a fossil, and appeared to be known by only three specimens, all taken on the island of Hispaniola. Although the University of the West Indies was in the middle of their Christmas holidays,



5. Fringed-lip bat, *Trachops cirrhosus,* from British Guiana (wing span 21 in.) 6. White-spotted vampire bat, *Diaemus youngii,* British Guiana (wing span 16 in.) 7. Hammer-headed bat, *Hypsignathus monstrosus,* Africa (wing span 36 in.) 8. Jamaican flower bat, *Phyllonycteris aphylla* (wing span 12 in.)

its zoology staff kindly arranged an expedition to St. Clair Cave, some 50 miles northwest of Kingston.

The visit proved far more exciting than I had dared hope. After climbing for almost an hour, we arrived at a large vertical sink hole almost overgrown with tropical vegetation. We lowered ourselves to the bottom by rope. Then we proceeded down on about a 45-degree angle, through a passage almost choked with boulders, until we reached what was obviously an old underground river bed. St. Clair Cave is about two miles long. We headed for a section known as "inferno passage".

Our route followed a sloping ledge covered with about 10 inches of wet mud and bat guano, with a sheer drop to a boulder-strewn body of water below. As we climbed higher the temperature rose until there seemed to be no air, and moisture dripped constantly from the ceiling. Here, almost immediately, we discovered the species of *Natalus* I was so anxious to obtain.

After working this area for about an hour, we decided to press on. My companions suggested that we take down the mist net we were using; but since I had a spare net in my pack we left the other set, to be picked up on the way back. We explored as long as we dared, then returned to "inferno passage". As our lights swung on the net we had almost taken down, a cold chill suddenly engulfed me. The tortuous climbing, depressive heat and high humidity had reduced me to a state near complete exhaustion, but the sight before me brought on such a thrill of excitement that I was dancing around exuberantly and undoubtedly babbling incoherently. Here in the net hung not one, but two beautiful examples of the flower bat, *Phyllonycteris aphylla,* the species previously known by a single specimen! Also, the net had trapped another species of flower bat, *Erophylla sezckorni syops,* which is not so rare as the first, but nonetheless was new to our collection.

The hour was growing late, our batteries were growing weak; we were forced to leave the cave. As we entered the cavern that would lead us to the surface, thousands of bats were preparing to leave on their nightly foray for food and by the time we reached the main passage the whir of their wings was like a giant motor. At one bottleneck we could literally reach out and catch bats of all shapes and sizes as they flew past. Finally and reluctantly we moved on and out. We had already stayed too long. It was completely dark, and as we laboriously stumbled and scrambled our way back down to our truck the rain poured down. But we had secured almost 150 specimens of nine different species. This had truly been the most exciting bat collecting experience of my life.

The day was not over, however. Back in Kingston, after a much needed bath, and in clean clothes, we carefully weighed, measured and prepared every one of our specimens. My wife and daughter had already retired for the night; they accompanied me to a laboratory of the University of the West Indies where Dr. John Parnell and Mr. Tom Turner, my companions on the cave visit, joined as at work. At 3 a.m. we were finally deposited back at our hotel. What a way to spend a holiday!

Bats (Order Chiroptera) constitute the second largest group of living mammals, exceeded in number of kinds only by the rodents. There are close to 1,000 different species known today. Counting subspecies or geographic races, almost 2,000 kinds have been discovered and named.

The Department of Mammalogy of the Royal Ontario Museum has embarked on a special bat research project, for which specimens are being collected from all round the world. The plan was conceived some five years ago. The first step was to establish a small special trust fund into which all available money was channelled. Last year the fund at last seemed large enough for us to begin work. A small booklet, *Collecting Bat Specimens for Scientific Purposes*, was published, and we began enlisting potential collectors in various parts of the world. The response and results have been rather staggering.

Significant collections have already been received from British Guiana, Surinam, Colombia, Brazil, British Honduras, Jamaica, England, Ghana, Tanzania, Malawi, Malaysia, Borneo and Pakistan. Exchange with other institutions has provided us with specimens from most of the United States, Mexico, El Salvador, Belgium, Czechoslavakia, Tanzania and Ethiopia. We have established contact with other collectors who have promised to collect for us in Guatemala, Cuba, Puerto Rico, Cameroons, Southern Rhodesia, South Africa, Ceylon, Philippines, Australia and New Zealand. New contacts are being established each week.

As specimens arrive from around the world and more and more rare species become represented, our collection grows increasingly important. In certain

groups, it now equals or exceeds those of the other great museum collections of the world. As an example, only recently a number of bats arrived from Ghana, among them two specimens of a small fruit bat which according to recent literature is known by only four other specimens, two in the British Museum and two in the Berlin Museum. A recent ROM scientific publication reviews all the known specimens of the genus *Ametrida*: there were only 30 located in 12 different institutions of the world, and three were in the Royal Ontario Museum. Since its publication, three more have arrived from our collector in British Guiana.

In another paper "A review of the flat-headed bats of the family *Molossidae* from South America and Africa" (ROM Life Science Contribution 64), I described a new genus of which only seven specimens were known outside the ROM; we now have about 36. Of the 17 different families of bats, the ROM now has representatives of all but two, one found only in New Zealand and the other only in Madagascar. In 1954 the ROM had 841 bat specimens; in 1959 the total was 972; today it exceeds 5,000.

At present we also have a local bat research project under way. A graduate student, Mr. M. Brock Fenton, is carrying out studies of the general ecology of eastern Canadian bats including the microclimatic evaluation of hibernating sites, winter and summer movements, growth and development, interspecies relationships and various other avenues of investigation.

We are concerned with a much broader consideration of the Order Chiroptera than the question of mere rarity or uniqueness. We are especially interested in speciation in its broader sense, which involves morphological development and variation, ecological adaptation and distribution as well as phylogenetic relationships and zoogeographical considerations. Already our bat collection contains key specimens which will allow clarification of dozens of taxonomic problems. The neglect of this group of mammals in years past has left us with a virtual gold mine of opportunity to contribute new knowledge to the growing spectrum of science.

9. Free-tailed bat, *Tadarida europs*, British Guiana (wing span 12 in.) 10. Hoary bat, *Lasiurus cinereus*, Ontario (wing span 14 in.) 11 and 12. *Ametrida centurio*, British Guiana (wing span 8 in.)

In total, our bat research program has become a "tiger by the tail". It has developed so rapidly and with such momentum that we are now hard pressed to cope with it. We need more funds to keep our network of collectors active; we need more manpower to process the specimens and data and to carry out the research problems which demand attention; and finally we need more space, especially storage cabinets in which to house our expanding collections. Rather than wait to find the solution to these problems, we find the challenge so exciting that we intend to press on at full speed, in spite of the great possibility that people will shake their heads and mumble "the guy has got bats in his belfry".

SERVING THE HANDICAPPED

The museum opens new worlds to the blind, the deaf, and the crippled

Norma Heakes, Supervisor, Education Department

"THAT ALL MEN MAY KNOW HIS WORK" is the inscription spelled out in the glittering mosaic ceiling of the Royal Ontario Museum. This quotation from the book of Job is a fitting statement of the general objectives of the museum. The word ALL is of particular significance to those who work with handicapped people. The reminder of everyone's heritage is housed in the museum, yet for some disabled persons it is difficult or impossible to study or enjoy its treasures.

Sometimes Mohammed goes to the mountain. Last week 15 or 16 youngsters converged upon the solarium of the Ontario Crippled Children's Centre for the weekly meeting of the Royal Ontario Museum Club. All were resident patients of the Centre. Some were on crutches, some in wheel chairs—they can go the fastest—and some on stryker beds. All were looking forward to an hour's fossil hunting. Nor were they disappointed. Everyone left the hunt with an ammonite, a brachiopod or a trilobite. Everybody had new information and ideas to think about. "Just imagine! This fossil may have lived 500 million years ago."

This project, initiated by the Members' Committee of the Royal Ontario Museum, is planned and carried out jointly with the Education Department. Its purpose is to provide not only an after-school activity but also an oppor-

tunity for these children to broaden their horizons through contact with the museum.

This is not a simple lecture illustrated with slides. The master of ceremonies for the day will have spent considerable time selecting artifacts and specimens from the museum collections. The pace of the meeting will be slow. Each child must have time to handle the fossils, the snowy owl, or the quartz crystal. Each must be encouraged to express his ideas. It does not matter if all the museum objects have not been used. What does matter is that the pale tired child on the stryker bed now has a spark of interest in her eye and colour in her cheeks. For a few minutes she has been lifted into a different world.

When crippled children from either the Centre or Sunnyview School visit the museum, the selection of objects is not a problem: the exhibits are waiting for the children. Rather, details about the physical arrangement of the building must be considered. How many wheel-chairs are coming? How many stairs lie between the geology gallery and the Indian galleries? Is someone free to load us all onto the freight elevator? Oddly enough, details like these never upset anyone. Everybody—teachers, guards, bus drivers and children—is always in good humour, flexible and ready to take advantage of the unexpected. Some of us still remember the day 23 whistling swans settled on the water of Toronto Bay. The boys from Variety Village were quickly transported to the waterfront instead of to a gallery.

The Crippled Children's Club is only one of the contacts which the Education Department has with groups or individuals who have difficulty in visiting the museum. On two different occasions, a Royal Ontario Museum teacher has been the guest of the Ontario School for the Deaf at Belleville. Both visits proved to be mutual learning experiences. Before the museum teacher could make the contents of her travelling box meaningful, she had to learn the teaching methods used in the school. Very little sign language is used. A combination of speech, speech-reading, silent reading and writing are used in what is known as the Oral Method. The groups in the school are arranged according to vocabulary and word structure level, not content, which explains the wide age range (11–21 years) in the Intermediate and Senior Schools. At first one feels that the museum lesson is purely a vocabulary exercise. This feeling changes within a couple of days. Once names are attached to artifacts, questions and comments create a lively atmosphere.

There were two direct results of the contact with the Ontario School for the Deaf. First, Belleville students made a day-long trip to the museum where they continued and expanded the work that had been started in the classroom. Second, the experience gained with Belleville pupils made the museum teacher eager and able to co-operate effectively with the North York Hard of Hearing Unit. In this group pupils are trained to take their place in the

regular classroom. The visits to the museum were planned to increase the pupils' vocabulary, broaden their information, and, most important of all, to whet their curiosity. They were shown films, taken round the galleries, and given the opportunity to handle authentic objects. The visit also involved the pupils in new social situations. Finding the price of a sandwich was a real test of their ability to read the lips of total strangers.

One of the most exciting experiences for handicapped and museum staff has been with adults. It started, really, with the publication of *Beauty for the Sighted and The Blind* by Allen H. Eaton (St. Martins Press, New York, 1959). A volunteer at the Canadian National Institute for the Blind, feeling keenly about the book's implicit message to museum personnel, gave a copy to the Director. The challenge was accepted.

Mr. Eaton feels that it is the moral obligation of museums to ensure that the handicapped become and remain part of the total community life. He stresses that blindness and other disabilities leave the individual intact and that mental and spiritual potentials of the person need not be damaged. He describes how communication between the sighted and the blind can be encouraged by sharing the world of beauty. A heterogeneous collection of objects was chosen which appealed to the sighted and interested the blind. The essential elements of beauty, form, order, and proportion were found in the starfish, the quartz crystal, and a piece of Royal Copenhagen porcelain. Colour is an important consideration; it adds to the enthusiasm of the sighted which, in turn, enhances the description of the object.

The program for the blind at the Royal Ontario Museum was inspired by this book but is not patterned after that developed by its author. The Canadian National Institute for the Blind organizes the groups interested in museum study. Our original intent was to give a general survey of the work of various departments. By the second year the response was so great that a second group was organized to run concurrently with the survey series. This group concentrated upon four areas only: ancient China, ancient Egypt, textiles, and European glass and porcelain.

Every meeting was an event in itself. Just how important was brought home to us when we discovered that one man came weekly, with his wife, 110 miles from Bracebridge. During the survey course, the blind discussed and handled the remains of prehistoric animals. They held and studied 17th-century European glass and Chinese porcelain. They identified minerals by the mineralogist's tests—hardness, texture, crystal structure and specific gravity—using equal-sized cubes of ten different minerals, specially prepared by the curator. The blind examined by touch the various skin coverings of mammals, from the shell of the armadillo to the silky fur of the lynx. They listened to musical instruments ranging from harpsichords to gut buckets, the modern version of a mediaeval monochord. Every session introduced new

ideas and exciting facts. More satisfying to some was the opportunity to give shape to words they had known all their lives: "I've often wondered how big a bat is."

There were many surprises for both the sighted and the blind. A special felting process was used on a mimeograph machine to reproduce Egyptian hieroglyphs. The sensitive fingers of the blind quickly learned to recognize and translate the characters. It was fascinating to watch them make the transition to incised hieroglyphs on authentic tablets. Another moment of delight occurred when one individual was able to differentiate between two European porcelains, one of the 17th century and the other of the 18th century.

The program with the blind is truly one of mutual learning. The museum staff find that it is a challenging experience. It has insisted that we look at our material from quite a different angle. It has demanded that we review and revise our methods of presentation.

The curators found that minor adjustments had to be made in the selection of the objects—but not in the content of their information. A more concise vocabulary had to be used to replace visual recognition. Good enunciation and slowness of speech were essential if everyone was to hear.

The articles chosen from a collection must be selected for their appeal to the senses. The size, the shape, the texture of the surface are qualities which will help to identify three-dimensional objects. Articles seen by the blind should be as perfect as possible: sensitive fingers frequently concentrate upon the flaw—the chip in the plate. There should be a variety of specimens so that appreciation and recognition can be made through comparison. As many samples as possible of one thing are necessary so that the whole group can "see" while the leader is describing it.

From our experience we have found that it is preferable to sit at tables set up in a U shape, with the lecturer and volunteers on the inside. A table is the home base. It gives peace of mind to the curator and security to the blind. Although the blind are noted for the care with which they handle objects, they must have some place upon which to rest them. A table also gives the visitor an opportunity to use both hands for exploring, and psychologists claim that both hands are needed for maximum sensation. Finally, people seated around a table can hear the lecturer and each other better. This last point is important. There is always cross-conversation. At first we found it disconcerting. Comments, questions, exclamations would often interrupt the person conducting the meeting. Yet verbal expression is a natural response for the blind. How else can they share their ideas? A smile or a lifted eyebrow has no meaning.

The role of the volunteer is most important in our program. The volunteer meets the visitor at the entrance and guides him to the meeting place. As they

walk through the galleries the volunteer will keep up a running commentary about where they are, stop to "show" a piece of sculpture, or announce the exact number of steps they are about to ascend.

The first collection of objects for the education of the blind was made in Vienna by Johann Wilhelm Klein between 1804 and 1809. Since then many museums in Europe and North America have made sporadic efforts to serve this minority group. Most programs have been short lived.

There appears to be a need for a permanent museum program not only for the blind but for all handicapped persons. It can no longer be an incidental visit added to the schedule at a slack season. Nor will ramps for wheel chairs and braille labels be enough. A study of the various disabilities represented is basic to the work. Our guests' limitations must be known. A survey of what has been done or what is being done by other museums would be valuable. The time seems to be ripe for the development of a permanent program which will be integrated with the life of the museum and the community.

THE NEEDLE IN THE HAYSTACK

A 30,000-mile search produces an important new record of man's early progress in Iran

T. Cuyler Young, Jr., Assistant Curator
Near Eastern Department

IT was hard to see the bottom of the ford. The rushing mountain stream was boiling across the road, swollen by melting snows and recent rains. All we could see was that the truck ruts went into the water at one point and came out at another. The problem was to judge exactly where in the middle of the stream the solid track was. We guessed wrong. Halfway across, the left tire of the Land Rover slipped into deep water, the foam came surging up over the hood, drowning the carburetor and shorting the spark plugs. There was nothing to do but take off our trousers and wade back to shore. Fortunately, a truck was pulled up for the night at a small Kurdish tea house a little distance back from the ford. We got a tow line attached to the Rover, and with wheels spinning madly in the mud, the truck pulled us out. It was now too late in the day to try the ford again and go on, so we unloaded our gear and joined the truck driver, his helper, and some local villagers in the tea house for the night.

It was a friendly tea house, and we were soon caught up in the conversation around a crude iron stove in the middle of the room. The truck driver told a harrowing tale of how the autumn before he had tried a run just a few days too late in the season over this trail, had got caught in a snow storm, and spent five months waiting in this tea house for spring to come. Now spring was here, and he was making his second trip of the new season. How long would it take to get to Sar Dasht, our destination? Well, he had come from there today. He had started at dawn and made this tea house by dusk. We had started this morning from the other end of the trail—Mahabad—and had managed to come about thirty miles. Another day to Sar Dasht added up to two full days—thirty hours—to go about sixty miles.

The trucker's helper turned to me and asked, "Why are you going to Sar Dasht?" I replied, "To look for mounds—sites of ancient occupation in the Sar Dasht valley." I went on to try to tell him how the pass west of Sar Dasht was one of the main routes used by the ancient Assyrians in their campaigns into the Iranian mountains, and how, therefore, there was a good chance of finding an important Assyrian town site somewhere in the region. He looked at me as though I were completely out of my mind, and asked, "Who pays for this?" "The Royal Ontario Museum, the University of Toronto, and anyone else who would like to help," I answered. He bought me a tea (perhaps the tenth glass we had had, but it is one way to keep warm), thought for a while about my answer, and said, "And they pay you to look for these mounds?" I tried to explain that they paid me for this and a good many other things too, but he didn't seem to think that nearly as impressive as being paid to look for ancient mounds.

As we crawled into our bedding for the night, he shook his head again, and said, "What's the profit in it for them?"

"What, no profit—no return in money?"

"No. No money profit, but profit nevertheless."

"Crazy fools," he muttered.

The fleas kept us awake all night, and by morning I wasn't sure that I didn't agree with the young man's judgment. When we got to Sar Dasht the next day, however, and found the huge mound we had suspected might be there, I no longer felt the fool.

Most of the roads we travelled last year in western Iran were not as bad as this one. Some indeed were very good, else we would not have been able to cover about 30,000 miles in the time we had, or locate, examine and map some 200 new archaeological sites in Kurdistan and Azerbaijan. At five different places we probed up to the Iranian-Iraqi border as we had at Sar Dasht, looking over all of the major mountain passes used by the Assyrians in the first millennium B.C. in their campaigns against the fierce hill peoples who lived in the Zagros mountains. At all of these passes we found sites.

Back from the border, in less isolated and wild country, we surveyed the valleys of Hamadan, Arak, Saveh, Zanjan, Kangovar, Bisitun, Kermanshah, Sanandaj and Sar Pol-i Zohab. Another trip took us to the north, where we explored a string of valleys along the Russian-Iranian border west of Astara. Gradually a picture of changing settlement patterns over the area became clear. We were able to eliminate certain valleys as having been less important, and to concentrate our attention on those areas where best results could be anticipated. By the middle of the summer, after we had already spent about four months in the field, we had narrowed our search down to the area of modern Kangovar and Bisitun.

What exactly were we looking for, and why had we come to concentrate our attention on the Kangovar-Bisitun area of western Iran? Part of the answer is found in the article "Next Step from Hasanlu," *Meeting Place*, Vol. 1, No. 4, 1965. The ROM was looking for a site to excavate over the next four or five years in western Iran, where it could make a significant contribution to the development of our understanding of the prehistory of this region, recently brought into focus by the excavations at the site of Hasanlu in northwestern Iran, to which the museum and the university contributed. This meant we were looking for a site where first millennium B.C. materials rested on or near the surface of a large mound, underlain by a maximum depth of occupational deposit dating to still earlier periods. The further back the sequence went the better, for we were also co-operating with the university's Department of Anthropology; Dr. Philip Smith was looking in the same area for a cave or early mound with materials dating back to the pre-pottery Neolithic and the Palaeolithic periods. If we could find a number of sites which met all of these requirements in a single, fairly limited area, we could then excavate an unusually long sequence of material and, at the same time, bring other experts into the project to study the natural environment—the geography, geology, flora, fauna and climate of the valley. This would give our archaeological study the depth it needs so that we might understand the fluctuating local history of man against the natural environment. In other words, we are concerned with more than archaeology alone. We would like to develop as broad a picture as possible of the ecology of the area chosen for detailed examination.

Three sites which met our archaeological requirements were found in the Kangovar-Bisitun region, and the area itself was small enough to permit a fairly complete study of the environment by natural scientists. Two of these sites, the Palaeolithic cave of Ghar-i Khar and the aceramic Neolithic mound of Ganj-i Dareh, were sounded in test excavations by Dr. Smith. The mound chosen for preliminary excavation by the ROM is Godin Tepe, located at the southeastern corner of the Kangovar valley at an altitude of about 4600 feet above sea level. The mound is roughly oval, covers approximately 25 acres

and rises to a height of about 100 feet. Here we dug from mid-September to early November, and recovered, in two fairly small test trenches, a preliminary section of the site from the summit to virgin soil.

Tentatively, this sequence can be divided into seven main cultural phases (numbered from the top down). Period I is represented by a single occupation of recent date: an Islamic fortification no older than the 18th century A.D. Period II is a thin stratum of loose wash, with pottery dating to between the 8th and 4th centuries B.C. Period III, the first important occupation which we uncovered, was represented by about 26 feet of deposit and several construction levels. Evidence indicates that the last occupation in this period was probably destroyed by an earthquake. The period probably dates to c. 2000–1600 B.C.

In Period IV we came across evidence for a culture characterized by a distinctive type of incised grey pottery which heretofore had not been found in western Iran south of modern Tabriz. This culture has strong connections with eastern Turkey and the Caucasus mountain region, and its appearance in central western Iran indicates a migration southwards of a people from the north. Before our excavations this important historical event was not even suspected. We can only guess at the dates for Period IV at Godin Tepe, but something in the neighbourhood of 2700–2000 B.C. is reasonable.

Period IV, however, was not our last surprise. In Period V we excavated two construction levels which date to the Uruk period in Mesopotamia (3500–3000 B.C.). Here again we had stumbled across something quite new and rather unexpected, for this is the first solid evidence from excavation for the Uruk culture in western Iran. Interest in this period, of course, centres around such problems as the beginnings of urbanization and writing in Mesopotamia. Just what the relationship between Godin V and the Uruk culture in the southern Tigris and Euphrates river valleys is we cannot yet say, but further excavation should tell us much.

Below period V is a deep deposit of mixed occupational trash and decayed mud walling defining Period VI. The pottery from these strata can be tentatively dated to c. 5000–3500 B.C. Period VII, which was rather shallow and rested on virgin soil, represents a very early occupation of Godin in the pottery Neolithic period. A comparison of the pottery and small artifacts found with similar finds at other sites in western Iran suggests a date in the range from 5500–5000 B.C.

Potentially, if we are able to continue our excavations, Godin Tepe is a most important site. Its size and location indicate its continuous importance as a major town site in central western Iran, and the length of its cultural sequence would probably be hard to match at any other site in the region. We have only made a beginning, however, and it will take a great deal more work to realize the full potential of this remarkable mound.

In the last week of the dig we made a chance find which dramatically demonstrated the strong element of luck in archaeology and which went far to make up for the fact that Period II had been a disappointment at Godin. One of our workmen came to me at tea break and told of a large block of stone, lying in a village built on a mound down the road. According to his story the stone had a picture of a "great king" on one side and strange writing which no one could read on the other. I thought it unlikely that this stone was of any importance, for one is always hearing such stories, checking up on them, and finding nothing more than a gravestone perhaps two or three hundred years old. Still, duty demanded that we check, so one rainy day when work was impossible at Godin we drove the four miles to the village of Nejafabad to see the stone . . . and stumbled onto the most important single find of the whole expedition. Sitting in a hole in the centre of a village street, where it had been found some three years before by local people digging a foundation ditch for a new house, was a block of metamorphosed limestone about 5½ feet long, 26 inches wide and 27½ inches thick (we found out later that it weighed about three tons). On one side, even in the gloom of a heavy rain, one could see a relief of an Assyrian king. On two of the remaining three sides of the block were 75 lines of Neo-Assyrian cuneiform inscription: the detailed record of an Assyrian military campaign into the Zagros mountains and the first Neo-Assyrian inscription found in Iran.

We immediately communicated with the Iranian Archaeological Service in Tehran, and they at once sent a man armed with the necessary authority and money to transport the stone to the National Museum. It took us four days to record our find *in situ*, and almost a whole day to load it into a truck for the trip to Tehran. No equipment was available, and moving three tons of rock with primitive levers onto a ten-ton truck in such a fashion that no damage was done to the relief or to the inscription was a tricky project. It was all very much worth the effort, however, for when this inscription is read and published in detail we shall know a very great deal more about the Assyrian period in western Iran.

From the point of view of the truck driver's helper we were, and still are, a bunch of fools. I wonder, however, whether if he met us once again in that tea house and we told him of what, in one sense, we had found at the end of the road to Sar Dasht, he would come to see the point of it all. I think he might. He is an Iranian, and an Iranian has, beneath the surface, a strong sense of history. Why should he not? He lives in a country where a tradition of settled life goes back into the sixth millennium B.C. And somewhere back there his roots and ours spring from a common stock.

D. H. LAWRENCE & ANNA KARENINA

AN EXCHANGE OF VIEWS

BY HENRY GIFFORD & RAYMOND WILLIAMS

Anna, Lawrence, and "The Law"

LAWRENCE CAME to self-realization, I think, in some part through wrestling with Tolstoy, whose "marvellous sensuous understanding" he rated highly, but whose "metaphysic" he thought ignoble. The struggle centres on *Anna Karenina*, a book that had engrossed him in student days, and that later bore closely upon his own situation when he married Frieda. Tolstoy betrayed Anna, in Lawrence's view. He denied thereby his "instinct for life" which should transcend any mere "theory of right and wrong." The doctrine of *Anna Karenina* Lawrence held to be blasphemous: and perhaps his final effort at rectification was made in *Lady Chatterley's Lover*.

What is meant by the "instinct of life," and how does it show in the novel? One episode defines it excellently: Anna has returned to St. Petersburg and is appalled at the sight of her husband:

"Oh heavens, why has he such ears?" she thought, looking at his cold and imposing figure, and particularly with amazement at the fleshy parts of his ears, as they propped up the rim of his round hat. On seeing her he came forward to meet her, forming his lips into his habitual mocking smile and gazing straight at her with his large weary eyes. A certain unpleasant feeling caught at her heart, when she encountered his fixed and weary gaze, as though she had expected to find him different. What struck her particularly was the feeling of dissatisfaction with herself which she experienced on meeting him. The feeling was an old and familiar one akin to a sense of hypocrisy, which she experienced in her relations with her husband; but before she had not noticed this feeling, now she clearly and painfully recognized it.

Similar to her feeling is that of her newly declared lover Vronsky, who looks on Karenin as a dog, sheep, or pig fouling the spring where he longs to slake his own thirst. Their reaction belongs to "the body's life"—the body that "feels real hunger, real thirst, real joy in the sun or the snow, real pleasure in the smell of roses or the look of a lilac bush," and real emotions. Karenin's aspect—the fleshy ears, the tired eyes and bantering voice—are signs of his damnation. He is a "social being"—one who fails to possess himself, but who, after forgiving Anna and Vronsky, is soon parted from his fine intentions by the "brute force" of social opinion. Anna confesses to her brother "I can't live with him. Understand, the sight of him affects me physically. . . ." This response is the truer, Lawrence would claim, for being involuntary, like the response of Miss Louisa to the withered clergyman in his own story *Daughters of the Vicar.* Such instinctive judgments, as Leavis observes, "express a moral sense that speaks out of the fulness of life."

We can distinguish between the "goodness" of Stiva (which enrages Dolly in the opening scene) and the "virtue" of Karenin. Stiva, for all his moral

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Henry Gifford and Raymond Williams *take issue with D. H. Lawrence on the meaning of Tolstoy's* Anna Karenina, *and here debate Tolstoy's intent and Lawrence's febrile attack upon that classic novel. "D. H. Lawrence and* Anna Karenina," *one of a dozen essays included in* Russian Literature and Modern English Fiction (*The University of Chicago Press, October, 1965*), *edited by* Donald Davie, *demonstrates the editor's contention that Russian novelists have exerted a powerful influence on virtually every serious British and American novelist in the twentieth century. Primarily an account of how English-speaking readers have reacted to Russian fiction, the volume also includes two Russian views of Dickens. Among the contributors are Ford Madox Ford, Henry James, George Moore, Philip Rahv, George Saintsbury, and Thomas Mann. This volume is one of the first in a new series of anthologies of critical writings, "Patterns of Literary Criticism," jointly published by the University of Chicago Press and the University of Toronto Press, under the general editorship of* Marshall McLuhan, R. J. Schoeck, *and* Ernest Sirluck, *all of the University of Toronto. Reprinted by permission of* The Critical Quarterly, Midway, *University of Chicago Press and University of Toronto Press.*

insouciance, has no truck with falsehood; Karenin, the self-consciously upright man, lives with it comfortably enough. Anna is like her brother in radiating this quality of "goodness." She has the same effortless charm, and she appeals by her candour. "Apart from intelligence, grace, beauty," Levin reflected on first meeting her, "she had truthfulness." Under necessity, of course, she may abuse this instinct for truth, living with Karenin while she is expecting Vronsky's child; but ultimately she cannot disguise from herself the truth. As Lawrence said in the *Fantasia*, "let it be a great passion and death, rather than a false or faked purpose."

It is possible to see Anna's conduct as a challenge to a false and faking society (which she braves at the theatre in Moscow), or as an affront to the family and traditional pieties. Tolstoy does indeed show up the triviality and insincerity of the "great world" by Anna's example of passionate and serious loving. As Berdyaev says, we are given "the truth and rightness of the love between Anna Karenina and Vronsky as against the falsehood of Karenin's legalism and pharisaism." "By their own souls," Lawrence insisted, "they were right." Yet Tolstoy could not admit that "truth and rightness" belong to this love. Anna—a consideration that hardly occurs to Lawrence—had broken her home, and worse, abandoned the child of her marriage to Karenin. Tolstoy judges her in the cherished name of the family, the idea which possessed him at the time of writing this novel. The supreme test is Dolly's visit to Anna in her second home—a visit that contrasts tellingly with Anna's mission to her in the opening scenes of unhappiness. Dolly is prepared to forgive, even to side, with Anna. But she at once divines that the whole establishment is false, to the extent of Anna's not knowing how many teeth the baby has. Dolly returns from the illusory happiness of the lovers to the solid content of her own home. She has been weary on her drive to Anna; but this is wholly unlike the weariness of Anna's own last drive to destruction. Her soul is tired rather than sick; and she owes salvation to the family. She has that inward "peace of mind" so deeply desired by many characters in the book.

The ideal of the family is honoured by the Shcherbatskys and by Levin whose old home represents for him "a whole world"—the world that had been the life and death of his parents. It is the world of Moscow tradition, rather than of Petersburg novelty, and these two cities are here, as elsewhere in Russian literature, used to symbolize the conflict between old pieties and modern pressures. Tolstoy shocked Turgenev by the tenacity of his prejudice. *Anna Karenini*, no less than *War and Peace*, combines a wonderful candour with a highly tendentious design. "When the novelist puts his thumb in the scale," warned Lawrence, "to pull down the balance to his own predilections, that is immorality." About Tolstoy's predilections there can be no doubt. The strategy of the novel is directed against Anna. Has Tolstoy tampered then with his natural feelings?

"Vengeance is mine," runs the epigraph, "and I will repay." The text can be taken variously. It shames the judgment of man (the judgment of the theatre audience who feel insulted by Anna's sitting among them). It may hint at the mercy of God. Yet as the story develops, this promise of vengeance rings ever more terribly in the reader's ears. Anna is doomed to the train wheels, which, as we are reminded by too many hints, have been waiting for her from the start of her infidelity—even since that first shriek of the engine whistle in the blizzard when Vronsky declared his love for her. This is the logic of guilty passion, which breeds in turn frenzy, bitterness, shame, and mutual hatred; finally a cynical despair, the moral nihilism of the rake Yashvin, whose words seem so true to Anna.

Levin's wife Kitty is allowed to describe her as "a vile woman"—and the judgment goes uncontradicted. A few hours before, Levin had been completely won over to Anna, by the spell of "her beauty and intelligence, her culture, and with these her straightforwardness and sincerity." Anna was indeed aiming to captivate him; yet the reader, despite Tolstoy's implication that something is subtly wrong, responds to her in the same way as Levin does. Therefore Kitty's outburst—the resentment of a pregnant wife who fears that her husband is being deluded—comes as a shock to us. Lawrence complained (in his essay on *Cavalleria Rusticana*) that Tolstoy deliberately seeks to humiliate Vronsky, that he "has a perverse pleasure in making the later Vronsky abject and pitiable." The same might be said of his attitude towards Anna, at this point.

Lawrence's own case makes him a far from unimpeachable witness. Still, a close reading of the book raises certain doubts in our minds: we ask the question that Tolstoy himself asked about one of Maupassant's heroines: "Why was this beautiful being destroyed? Must it really be so?" Anna, the delinquent, yet captures our allegiance. "It is the triumph of Anna's charm that remains paramount," wrote Arnold, ". . . the impression of her large, fresh, rich, generous, delightful nature never leaves us . . . keeps our sympathy, keeps even, I had almost said, our respect." To have done this, she must have appealed more strongly to her creator than the moralist in him would allow. When he set in motion that iron wheel of retribution, the "something enormous and inexorable" that crushed Anna, he shrank from her total destruction. As Arnold noted, "the graceful head is untouched."

Tolstoy seems to have isolated in Anna, and to some extent in her brother, the pride of the individual life, the "quickness" that Lawrence so deeply cared for. Dolly, and Kitty too, are good women, mainstays of the family, but they lack the compelling charm of Anna. Indeed, Dolly is ground down by family cares, so that nothing of the bride remains in her, she becomes wholly the anxious mother. And Tolstoy pits her, shabby and timorous, against the invincible beauty of Anna. He does not shrink from presenting the contrast in its most truthful terms. That is to be expected from Tolstoy's honesty. But in

a deeper sense he is not honest; or rather he cannot face the issue, which will not work out for him in accordance with his moral beliefs. Anna must be destroyed. She has been forced into a hideous marriage with Karenin, and there is no way out except through her own destruction. Lawrence was perfectly right in sensing that Tolstoy is already waging war on the flesh. After all, Anna's final reflections on sexual love, disordered though her mind is shown to be, quite simply anticipate Tolstoy's own later views. There is something like a self-mutilation in his punishment of Anna. Lawrence says that he "denied the Father, and propagated a great system of his recusancy, elaborating his own weakness, blaspheming his strength." Certainly the Tolstoy of subsequent years —the old man, for instance, whom Gorky knew at Yalta—was often perverse, seldom found peace in himself, clung obstinately to his system, "a man for whom all questions were settled."

"The real tragedy of Anna, and of certain characters in Hardy's novels who perished like her," said Lawrence, "is that they are unfaithful to the greater unwritten morality," which he also called "the Law." "All the while," he contends, "by their own souls they were right." Two views of life were at issue in Tolstoy's mind, one of them later to be expressed by Lawrence ("Any creature that attains to its own fulness of being, its own *living* self, becomes unique, a non-pareil") and the other by Eliot ("Those who glitter in the glory of the humming bird, meaning Death"). He affirms them both; and his torment as to which he should follow constitutes perhaps "the real tragedy" of *Anna Karenina.*

Lawrence and Tolstoy

BY RAYMOND WILLIAMS

CERTAINLY TOLSTOY'S influence on Lawrence is important. Once we are given the beginning of the thread, we are surprised how far it leads us: especially from *Anna Karenina* to *The Rainbow, St. Mawr,* and *Lady Chatterley's Lover.* Lawrence's attack on Tolstoy's working-out of *Anna Karenina* is only one clear and conscious incident in a long, complicated, and partly unconscious process, but it is useful to isolate it, for the time being, because of its exceptional interest. Yet let us leave out the possibility that in attacking *Anna Karenina* Lawrence was defending his own life with Frieda, and the similar interpretation of Tolstoy's own attack on *King Lear.* The novel and the criticism are general facts, and everything that needs to be said can be said in their terms.

We have to consider first a formulation by Lawrence that has become very popular: "when the novelist puts his thumb in the scale to pull down the

balance to his own predilections that is immorality." The metaphor is vivid, and we all like repeating it, but the issue it raises is very difficult. It seems to be often assumed that the scale in question is some general model, which if we like we can call reality, and hence that we can all take readings on it and watch when the thumb is applied. Obviously we have to work on some such general sense of reality, and some consequent criterion of probability. But if we take the question of *Anna Karenina* as it has been usually posed—the morality of a woman leaving an unsympathetic husband for a man who really awakens her love—we must surely see that there is no simple general-purpose scale. We know from evidence, in actual cases, that this can lead to a creative relationship, or to new forms of frustration and inadequacy, or to disaster. If somebody got out the statistics, we should still have no useful scale for any particular reading. Since we know that in any actual case the outcome will depend on the qualities of the people concerned, and on their actual circumstances, the most we can ask, in literature, is that the event corresponds to the given balance: that the internal logic of the voluntarily created situation should be obeyed. There are cases, undoubtedly, in which we can see this logic being broken, for external reasons such as compatibility to a public or a formula: think, in particular, of the routine "happy ending," though the routine "unhappy ending" and the routine ending of isolation and indecision are also relevant. But this is something different from the author's "own predilections," where we are saying either that the author is too weak or stupid to revise his general views in the light of the particular experience he is exploring, or (more insidiously) that we find his general views unacceptable. In the case of Tolstoy, we are surely bound to say that the charge of distorting *Anna Karenina* can only be sustained if we find evidence, from the constituent characters and circumstances of the book, that either for external reasons, or through weakness or stupidity, the given logic of the situation was falsified. But this is very different from any such metaphor as "the scale."

Two facts about the general reading of *Anna Karenina* are very noticeable. First, there is the common isolation of characters from their context, as if the tragedy of Anna could be considered apart from the actual relationships with Karenin and Vronsky, and without reference to the society in which these are lived out. The tone of many critics in their comments on Anna, is suspiciously rhapsodical: for to see the novel as a mere framework for the story of a beautiful woman sacrificed to convention is as narrow and sentimental as a similar reading of the *Antigone*. Secondly, there is the extraordinary isolation of the Anna-Vronsky-Karenin story from the novel as a whole, in which it occupies rather less than half the actual narrative. The exclusion of Levin, and of the Levin-Kitty and Stiva-Dolly marriages, is tacit but inadmissible. It is sometimes rationalized by the argument that Anna-Vronsky is the real story, and that the story of Levin (though of course occupying a great deal of space) is

simply the result of Tolstoy's incurable autobiographical itch: he had to record his discursive observations on work and faith even though the real story was about the lovers. Actually, this tells us more about the sensibility from which Tolstoy has been read—a sensibility which sustains most modern English fiction and criticism—than it helps in any way with the actual novel. Even in its less obvious form—the tacit exclusion of the Levin story, and of its relevance to the story of Anna and Vronsky—the narrowness is still evident. This is, really, the fashionable "personal relationships" dogma, in which certain kinds of relationship are abstracted from their context of society, work and belief, in obedience to strong and obscure pressures from our own kind of society. It is worth repeating a fact fairly obvious in reading the novel: that it is a whole structure in which all the elements are closely related and that the complexity of this structure is Tolstoy's actual scale—his basic reading of experience at this time. Readers and critics who isolate the Anna-Vronsky story should consider as just one example of this structure, the sequence of chapters in Part Five, where the marriage of Levin and Kitty is followed by the Italian "honeymoon" of Anna and Vronsky and then by Levin and Kitty setting up house and living through the first difficulties of their marriage, to the crucial death of Nikolay and the discovery that Kitty is with child. This is not the interweaving of plot and sub-plot, or of two separate stories, but the enactment of a single design.

The strength of Lawrence's case is his recognition of the quickening of life in Anna, after her meeting with Vronsky, but from this point on the actual elements of the novel are distorted, not by Tolstoy, but by his critic. The rejection of Karenin is certainly part of Anna's new "instinct for life," but it is much too crudely realised if Karenin is seen as simply damned (the crudeness of the physical disablement of Sir Clifford Chatterley is relevant here). Tolstoy created in Karenin, a memorable figure of the avoidance of love, but he was concerned to analyse rather than simply to damn. All his adult life, Karenin has been afraid of open emotion, of any kind, because of a characteristic fear that in exposing himself he will be hurt. This fear is once, and once only, overcome, in the great stress of the expectation of Anna's death after bearing Vronsky's child, and her powerful appeal to Karenin, accompanied by a temporary rejection of Vronsky:

> There is another woman in me, I'm afraid of her: she loved that man, and I tried to hate you, and could not forget about her that used to be. I'm not that woman. Now I'm my real self, all myself.

To this declaration, Karenin responds, for once breaking his habit and his fear, only to be told by Anna, after her recovery, that she has gone back to her previous position. Thus the pattern of Karenin's whole character has been confirmed: he has "given away" to emotion, and he has been deeply hurt. His subsequent deterioration is then hardly surprising. The point here is, not that

Anna's "instinct for life" is disproved, but that Tolstoy, quite evidently, is not dealing with cardboard figures of the "quick" and the "dead," but with actual processes of relationship in which love and hate are confirmed or denied. By letting us see this situation from each point of view in turn, rather than predicating the "quick" and the "dead"—the "quick" to be forgiven their weaknesses, the "dead" to be ritually damned—Tolstoy shows an absence of "predilections" that is characteristic of his extraordinary maturity as an artist.

The next crucial element is the character of Vronsky. It is true to say that he awakens Anna, but it is one thing to wake somebody, another to live through the day. Lawrence tells us that Tolstoy has a "perverse pleasure" in humiliating Vronsky, but the question that has to be asked is whether the Vronsky created by Tolstoy (and no other is admissible) is in fact capable of meeting the demands of the love which he has started in Anna. It is worth remembering that our introduction to Vronsky is, in the abortive relationship with Kitty, an introduction if not to a trifler at least to a man unprepared for a relationship of any permanence. Anna's own comment, just before her death, seems in retrospect an accurate account of a relationship with such a man:

> We walked to meet each other up to the time of our love, and since then we have been irresistibly drifting in different directions. And there's no altering that. He tells me I'm insanely jealous, but it's not true. I'm not jealous, but I'm unsatisfied.

Vronsky's qualities are obvious, but it becomes clear, as the relationship with Anna develops, that he lives in a single and limited dimension, in which there is no real place for enduring passion. We can be misled, as Lawrence was often misled, by too simple an idea of "masculinity." Tolstoy raises the point in the novel, in Vronsky's reflections on the character of the foreign prince (is being a man something more than being a piece of healthy beef?). More fully, it is raised throughout the novel, by the comparison between Vronsky and Levin, which is surely one of Tolstoy's major themes, and from which Levin emerges as undoubtedly the stronger man. It is quite easy, in a highly civilized society, to be carried away by phrases like "animal vigour," but this, as Lawrence sometimes told it, is frankly a cock-and-bull story. A man's strength has to include the tenderness of protection and the warmth of continuing care which are biologically necessary in the human condition. Without these, vigour can be merely destructive, as Tolstoy shows on a small scale in the killing of the mare, and on a larger scale in Vronsky's contribution to the destruction of Anna. When she is isolated, in the country and in Moscow, he repeatedly leaves her alone, to play at politics or to watch Yashvin's gambling. The cold regularity of his reply to her desperate appeals, on the day of her death, is just another "moment of carelessness," but it is characteristic of his limited and powerful determination (which, ironically, had first enabled him to break through to Anna). It is significant that Lawrence, reworking this situation in

Lady Chatterley's Lover, created in Mellors not a Vronsky, but a Levin. Mellors is strong and live, but he is also capable of deep tenderness, and interestingly, has that quality which Tolstoy saw as the means of health in Levin—an intimate and deeply respecting contact with the world of natural growth. Lawrence the critic was, after all, put right by Lawrence the artist, and we can leave it at that.

And yet, in spite of everything, did Tolstoy kill Anna, as a kind of renunciation of love? It is certainly true that Tolstoy insisted, much more than Lawrence, on the social consequences of primary relationships, but then, unlike Lawrence, he set all his fiction in real societies, and could hardly avoid what they were showing him: a network of actual and continuing relationships which could not be simply dismissed as puritanism and the grey North. The convention invoked against Anna is indeed shallow and hypocritical, but take a society in which there is no difficulty of divorce, in which an Anna would not be pointed at and avoided, and the human difficulty in substance remains. The child is there, in any society. Frustration and hatred are there, under any laws, if the real relationships are wrong. The tragedy of Anna is affected by her society, but the roots of the tragedy lie much deeper, in a specific relationship (just as, in modern societies in which the old sexual laws and conventions have been practically abandoned, men and women still kill themselves in despair of love). The action of Anna's tragedy is that she leaves one inadequate man for another; but the inadequacy of Karenin lay with an unawakened woman, but the inadequacy of Vronsky with a woman grown to passion and demanding it as the continuing centre of her life. The characteristic of Anna, at the highest point of her growth, is that she must live her feelings right through. Living on a limited commitment had been possible once, but it was from this that she broke out. Of course, not as a mature woman: the maturity seemed to be there, when she lived by her limited commitment to Karenin, but it is not there once her full energy is released. One of the few things we do not know enough about in the novel is her original attitude to the marriage to Karenin (this is usually left out of romantic and anti-romantic stories alike). But it is at least clear that she has become a wife and mother without ever having been a girl in love, but now in a situation where much more is needed. The rush of feeling is awakened by and attached to Vronsky, but this is not the whole story; there is also evidence, in her attitude to Vronsky, of the familiar adolescent condition in which overwhelming feeling as it were collides with an object rather than grows towards it. This can be disastrous, even for a girl, if the object is inadequate or irrelevant to the real force of the feeling. But Anna is not a girl; she is still in part the guilty wife and mother, and the combination is terrifying. The ordinary married woman's affair, as with her friends in Petersburg, is a characteristically limited commitment. We see this again in her brother Stiva, in many ways so like her, but unhurt because always essentially uncommitted. Anna shames the half-life of this society, but half-life is often a protection for

the weak and the immature. Stiva slips away from difficulty, from any real demand on himself, with his "almond-oil smile." Anna, in her delayed rush of feeling, must give herself wholly, without regard for safety, and whether she then survives depends on the quality of the man she is giving herself to. Nothing less is thinkable; the demand is quite absolute. Even her death is a revengeful move to make Vronsky love her more, and this tragic error (common enough in certain kinds of suicide) combines the wholeness and the immaturity which, falling on weak hands, unite to destroy her.

Tolstoy's logic, given the elements he has created, is sound. But of course Lawrence is right to imply that in choosing these elements Tolstoy was revealing himself. Yet it is no simple question of "being" and "social being." Tolstoy was torn by very deep tensions, not only because he was a particular kind of man, but because he went on living in his own society, with its own deep tensions, and in touch with his own errors, which he did not simply move on from. Aksinia, the serf-girl he had loved, scrubbed floors in his wife's house, and his son by her lived nearby. It is not, as it is sometimes put, a case of a young rake turned old Puritan. It is a man watching his own life, in terms of a society which divided people and exacerbated their necessary difficulties. I agree with Edmund Wilson that there were elements in this complex that he failed to recognize completely, and that there is a consequent dark area in his work, both in its shaping and in its omissions. But we must notice that in *Anna Karenina*, in relation to the tragedy of Anna, there is in the story of Levin an account of the fulfilment of a man who gives himself and commits himself completely. Significantly, this is a slow growth, learned as much from the death of his brother as from the love of Kitty, learned also in work and in the effort towards right working relations with other men. The density of this life of Levin's makes an obvious contrast with the single dimension in which, in their different ways, Vronsky and Karenin and Stiva live (in each of these men the attitude to work, and thence to other men, is seen as related to the differing yet inadequate attitudes to love). Levin translating a hundred-rouble note, lightly spent in Moscow, into the work of men in the fields, is involved with values in a sense equally opposed to the conventions of fashionable society and the mere flouting of them. In learning a reverence towards all that lives, Levin is learning something deeper than either respectability or personal honour. His ability to love Kitty as a wife, and then to love their child, grows from his whole attachment, which is more mature than anything Anna is allowed to live. Vronsky, in the end, wants marriage and a stake in the country, but in these terms the offer is both too much and too little for Anna: she does not want marriage and Vronsky's children, but she needs passion, which on Vronsky's side has gone. A meaningful society, and therefore a meaningful place in it, is for different reasons beyond both of them. Here is the moving field of all Tolstoy's greatest writing, and there are few writers who can live

with him in it. The irony is that Lawrence addressed himself to just these problems, though with less strength and in any case with less time (he died in the year of life in which *Anna Karenina* was begun). It is vitally important that we do not scale Tolstoy down to the limited sensibility (the separation of work from life, and of personal meanings from social meanings) which has recently governed our own culture. We can see the sense of Lawrence's protest, though he had to rework the book to sustain it (first in a critical error, second in a creative transformation). But while Lawrence's strength is of Tolstoy's kind, his weakness is that of our own majority culture, and must be analysed rather than merely repeated. (How dare Mr. Gifford, for example, write such a stale salon sentence as "Dolly, and Kitty too, are good women, mainstays of the family, but they lack the compelling charm of Anna"? Consider that contrast between "mainstay" and "charm." Does Mr. Gifford really live in that world, or if he does, does he want to?) "Fulness of being" is when we live as ourselves with others and in our world, and no writer more than Tolstoy, no book more than *Anna Karenina*, illuminates its substance, its consequences, and its demands. As in all tragedy, it is not the fate of characters we rest on, but the living patterns of experience that can help us to live.

Further Notes on "Anna Karenina"

BY HENRY GIFFORD

THERE IS A SENSE of outrage in Mr. Williams' reply to my article, "*Anna, Lawrence*, and '*The Law*,'" with which one must sympathize. Lawrence's views are too often repeated by admirers who never stop to inspect them; great and complicated novels like *Anna Karenina* do not get the responsible reading, the full view, they deserve; personal relationships too often, in our culture, try to escape from the necessities of communal living. We must agree with Mr. Williams that the Levin side of Tolstoy's novel bears directly upon the predicament of Anna: home, the family, rural ways, the realities of work stand over against the insecure relationships of the St. Petersburg salon, the world of railway trains and "escape from it all" to Italy. He is right too in stressing Anna's immaturity, and the fulfilment in Levin's experience, which is denied to her. A just reading of the book will recognize all these values. Why, then, invoke Lawrence and his accusations of blasphemy?

In the twentieth volume of the Russian "Jubilee" edition of Tolstoy, one may study the suppressed earlier drafts from which, after five years of intermittent toil, *Anna Karenina* as we know it emerged. A novel should be judged

by its final form; but Lawrence's sense of a certain unresolved conflict in the work (shared surely by many readers) finds a good deal of support in the evidence of these earlier drafts. Fortunately there is to hand an extremely careful study by Vladimir A. Zhadanov, published in Moscow three years ago, the title of which may be translated as *The Making of Anna Karenina.* From its analyses one may see, perhaps, what is meant by the novelist putting his thumb in the scale. Tolstoy, as George Steiner reminds us in his recent book, *The Death of Tragedy,* nearly always wrote with a "palpable design." He distrusted art, and could never fend off the didactic impulse for long. *Anna Karenina* bears ravages of that ceaseless civil war in its author, though, as Steiner points out, the double plot structure allows Tolstoy to release most of his didactic energies in the Levin story, and to treat Anna more freely and generously than he had intended.

Anna was always, of course, at the book's centre. (Note that even when, subsequently, Levin's story was added, Tolstoy chose to name the book still after her, and contrast this with the thematic titles of his other great works: *War and Peace, The Power of Darkness, Resurrection.*) Her story was to be that of an adulteress, who, is first seen in a drawing-room behaving not only indiscreetly but shamelessly with her lover. The husband decides that she is possessed by the devil. And this notion appears in more than one of the earlier attempts. An unrepentant Anna (then called Tatyana) returns to her husband after the race-meeting "with a diabolical glitter in her eyes." And the husband, in another variant which still keeps the diabolical motive, tells her: "Our life has been united, and united not by men but by God. . . . In our opinion there is a mystery, and you and I, we feel it. . . . I shall do nothing. I cannot and indeed I do not wish to punish. Vengeance is God's." There can be little doubt that it was Tolstoy, the rigid moralist who planned this story. It might have issued as a crude tract against adultery. The annals of adultery are almost without exception squalid; but there is always "the possible other case." Tolstoy by prejudging the matter had suppressed that possibility; and this is what I call putting a thumb in the balance.

But the balance rose against his thumb, all the same. Gradually Karenin (who wasn't so called at first) underwent a change. At the beginning he was a gentle, easily put out, weak, and almost unworldly figure, with a kind smile and kind blue eyes. Slowly he turned into the official; the "goodness" was taken away from him; his eyes and his bearing became *cold*; he is Karenin, after, it seems, the Greek word *karenon*, the head. And so we get the evasive but imposing figure who meets Anna at the station. Karenin lives like Casaubon in a paper world, and I would suggest that the author has far less sympathy for him than George Eliot shows for Casaubon. He is ranged with Levin's half-brother, who also prepares cut-and-dried formulations to meet the unexpected in life. True, there is once for Karenin "the awful daring of a moment's sur-

render," when he forgives Anna on her supposed death-bed, and Vronsky too. But very soon after he recognizes in the Princess Betsy's tone and smile that force of social opinion to which he has always bowed. Karenin *is* a "social being": he cares more for appearances than the truth. In that scene to which Mr. Williams has alluded, when Anna speaks of that other woman who has possessed her, and Karenin melts in forgiveness, I believe the didactic impulse has taken control. It seems to me a contrived moment (like the manifestation of Platon Karataev in *War and Peace*) but Tolstoy was too honest not to go back on it. Basically I am sure he was hostile to Karenin, who lives by the head, and is an emanation of Petersburg.

The counterbalance to Petersburg is Levin's world, Muscovite and rural. Mr. Williams has every reason for saying that here Tolstoy gets down to his real values: marriage, the family, the daily order of work in the fields. Anna, as we know, is condemned to live in a false society; and it is doubly tragic for her that the lover whom she chooses, in her denial of that society, should himself be infected deeply with its prejudices: he shows indeed what George Eliot called "spots of commonness." Anna, in fact, cannot enter the responsible world of Levin: we know—and Dolly's visit reveals this—how glossily unreal is the establishment that she and Vronsky set up in the country, when Vronsky needs occupation. Nobody can dispute the logic of Anna's case: she is necessarily excluded from some of the richest experiences in human life. When, therefore, critics like Arnold speak of her "charm that remains paramount," are they forgetting the full context? Perhaps—and yet surely it is not romantic to insist that Anna (even though she has deserted her child, and virtually destroyed both husband and lover) somehow evades human judgment? "Vengeance is mine, saith the Lord." Anna has done wrong; nonetheless she stands for qualities of truthfulness and generous feeling, even of dedication, that are found nowhere else in her milieu. Anna's protest against the Karenin set, its limited risks and saving hypocrisies, surely wins assent from the reader. But I believe in a more profound sense Tolstoy felt an involvement with Anna. We may recall that Levin originally fell in love with the Shcherbatsky family as a whole, and it is scarcely an exaggeration to say that he married Kitty on grounds of principle: he thought first of children and the married state, then of the woman who could provide these. Now Anna has an endowment of life—call it, as I perhaps unwisely did, a "compelling charm"—a spontaneity, which obviously attracted Tolstoy. Anna and Levin are the two most complete beings in the novel, and whereas Levin sometimes wearies the reader with his irritable probings after certainty, Anna disarms our prejudice against her: Tolstoy gave her, in spite of himself, an undeniable presence—she is no common creature. Tolstoy, as Pasternak has said in the *Essay in Autobiography*, though "a moralist, a leveller, a preacher of a system of justice applicable to every human being without exception, and in equal measure," yet was in himself startingly

original. An egalitarian, yes, but he always saw himself as *primus inter impares.* We know of the crisis that followed *Anna Karenina*: the long years ensuing which were marked by what Lawrence has termed "recusancy." Tolstoy never achieved the balance of Shakespeare after *King Lear.* We must not allow our knowledge of his later extremes to read overmuch into Anna Karenina. Was he lacerating himself when he drove Anna to her destruction? It is difficult to prove. Certainly he has pursued relentlessly the logic of her situation: one might contend (especially in the light of his earlier drafts) that he argues the case against Anna. His logical victory is complete; but why did he need to embark on such an argument? What led him to conceive Anna, to endow her so lavishly, and then to force her into an ugly marriage and a career of shame ending in a bloody death? There is an agony of spirit here which is never quite subdued by all the affirmations of virtue and responsibility in Levin's world.

Medical Research: A Triple Responsibility

(Continued from Page 26)

working with the electron microscope. These two teams, with their staff, technicians and know-how, picked up this new test and were able to apply it immediately to the advantage of our hospital patients. This was a good two years before many other centres, which did not have this research in progress, were able to make use of the new discovery.

Now, do these examples help you understand why the presence of well endowed research with full time research workers and adequate facilities increases the standard of medical care?

To review these advantages, it may be concluded that adequate research will allow occasional discoveries, better training and teaching of students, higher standards in our universities, higher ranking medical men, and it provides a better standard of medical care directly. What about the other responsibilities?

UNIVERSITY RESPONSIBILITY

It is well documented that universities need further funds for actual bricks and mortar and space for a larger number of full time staff with equipment and maintenance. Apart from this, however, a responsibility of the Faculty of Medicine is to maintain an organization which produces an atmosphere conducive to research with encouragement, help and understanding. The dean and departmental heads to a large measure set the pace.

A modern Faculty of Medicine should provide administrative organization for research at departmental and faculty level, which allows good lines of communication and a voice for the young research worker. In the old Faculty organization, the loudest voice went to the oldest members. The situation is not reversed now, but certainly if the youngest member is contributing he should have a voice that more closely approximates that

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of the more senior staff. This is necessary in order to keep the Faculty in touch with trends.

The Faculty must recognize the man with the true research bent and nurture this tender flame. He should not be overburdened with routine duties. Actually a medical faculty requires good administrators and good teachers as well, and research should not be the only door by which a young man gains entrance to the staff.

RESPONSIBILITY OF INDIVIDUAL DOCTORS

Doctors must accept the responsibility of seeing that the public knows what is going on in research. Refusing to have any dealings with mass communication media a generation ago was perhaps an acceptable thing because the type of research in progress did not need much government support. Doctor W. E. Gallie, for example, gained international recognition for showing that fascia, or sinew, when transplanted from one part of the body to another will live. He simply took some animals, removed the fascia from one area of the body and placed it in the tissue at their backs. He examined the fascia at intervals and found that it was microscopically alive—living fascia. Put in a setting of forty years ago this was, and still is, a great contribution by a truly great surgeon and teacher.

Research does not seem to be as easy now: I guess they have discovered all the simpler truths. Most research projects now require an interdisciplinary team with participation of the fundamental sciences. This is challenging and expensive work. As an example of this we are organizing an organ transplantation project and team under Dr. Alan Trimble, a Heart Foundation research associate. We have entered the field of heart and lung transplantation in animals. The use in humans is some years away but it is hoped that we shall be prepared for it and perhaps make a contribution. If it is to be done correctly it becomes a rather complicated project. Such a team will eventually consist of an immunologist, haematologist, pathologist, as well as a surgical physiologist. The financial support of this type of research exceeds the capabilities of the voluntary foundation, and requires heavy government support.

I am pleased to report that the medical profession are accepting their responsibility to keep the public informed. They have gone a long way in the last ten to fifteen years. They have press sections at all meetings and they have developed a medical press code which looks favourably upon most releases to the press, or radio, provided they come through an official agency, such as a medical association, a foundation, a university department or dean. It will take a while for the individual doctor to get over the traditional thinking in which he associates any form of publicity with advertising. I might say that the press have accepted their responsibility in a most remarkable manner. We now have medical experts on most of the major newspapers and their reporting is restrained, informative and interesting.

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In the days after the Second World War some of the medical reporting fell into the hands of cub reporters with hair-raising results.

I hope I have demonstrated in some way that this word "research" is very real. It is a necessity to maintain good medical care and by and large it is not a status symbol. It must be carried out in every university and as Canadians we would like to see it done well.

The three responsible parties, the government, university and doctor have all been meeting their responsibilities. The Federal Government has demonstrated its interest with such moves as the Hall Commission. They must be reminded, however, that there are forces at work which make it necessary to greatly increase their financial support to medical faculties. Because of the expensive nature of modern research, the government is the key figure in our research future, and as to how this should best be done, I would leave to the experts.

It has been recommended by the Hall Commission that we have a Medicare program, to which I subscribe in principle, and have an increased number of medical schools. I am not an authority on medical economics but I do *not* believe medical schools are being financially supported as they should be now, and if this were corrected, with the addition of new medical schools, I wonder where the money might come from to do this and have a Medicare plan as well.

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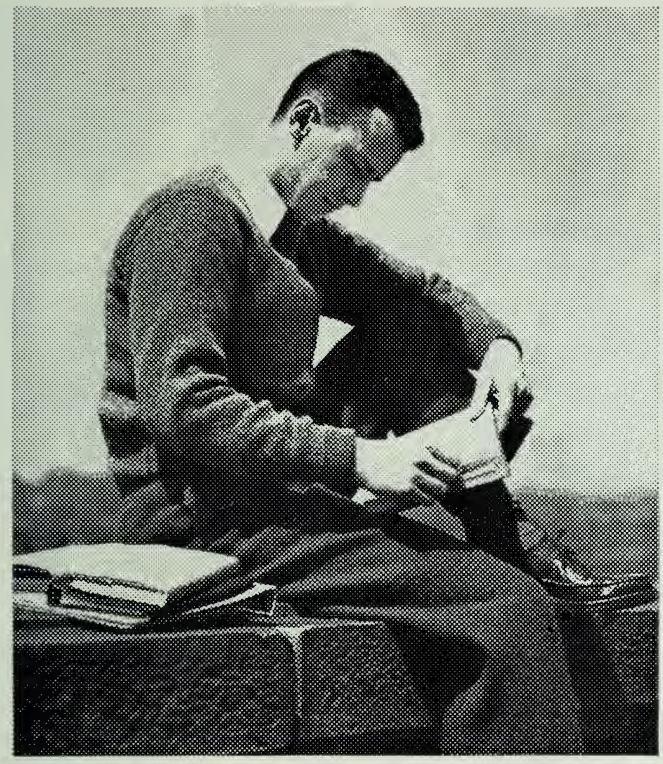
have been accepted and *three* rejected.

Two of the new acceptances would be multivalvular disease, thanks to improvements in artificial valves. Of those that would still be rejected, one was a 39-year-old mother of four with an operable heart condition but irreversible secondary changes in her lungs. She needed a new lung. The other was a 38-year-old widow with three children, whose husband had been killed in a mine disaster. She, too, had an operable heart condition, a patent ductus arteriosus with irreversible changes in her lungs. She also needed a new lung. They were sent home to die. This will likely occur in a few years before we solve the problem of lung transplantation.

The rapidly changing scene makes a decision to advise surgery a difficult one because the surgeon is not only balancing the future down-hill course of the patient against the risk and success of surgery, but another factor has to be considered, namely, what improvement might there be if we were to wait a year.

I feel research, besides doing all the things noted, induces a certain intellectual humility. This statement interests my wife. She feels that most physicians have intellectual humility, but she wonders how many surgeons have. When she is in a particularly loving and benevolent mood, which is not infrequent, she has been known to say, "You should have been a medical man, not a surgeon." Be that as it may, anything which we can do to keep us with an open mind and prevent narrowness of vision is, I believe,



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I would like to illustrate how research encourages a healthy open minded approach to medical problems. In order to learn the technique of cooling humans to lower body temperatures to improve our surgery, we have developed a groundhog farm and we have studied hibernation for about ten years. We have been extracting the hibernating glands and the blood of animals during hibernation to see if we can find a chemical or hormone. Four years ago we extracted an active substance from the gland which allowed us to cool test animals to very low temperatures, and this only appeared during hibernation. This appeared to be a momentous discovery which would perhaps affect many disciplines. We prepared for this in many ways including a request that the University manage our future patent rights, which I believe stimulated the formation of the Scientific

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We were tempted to publish these results quickly for priority reasons, but held back until all aspects of the discovery had been covered. A request by a team member to discuss this work while on a European tour was regrettably denied.

After a year and a half of hard work, about the time we had decided upon publication, we found unbelievably enough that we were not dealing with an extract of the hibernating gland but an extract of plastic tubing used in the process! This was discouraging, but we took this chemical—a plasticizer—broke it down and found the active principle was butyl alcohol. Happily this has led us now into a productive line of research dealing with the effect of alcohols, ether and adrenalin upon the tolerance to deep hypothermia. Regarding hibernation—mother nature does not release her secrets without a struggle, and thus far we have been unable to open this door.

What are the advantages of these frustrating lessons? This team research puts one in contact with other disciplines and broadens one's horizons. It teaches us how difficult it is to establish new scientific truths by research. It teaches us how much we do not know—open-minded humility.

So while we are striving for excellence through research, we may actually, as a by-product, be producing a scientific culture and preparing our minds to meet the next century of progress.

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INTEGRITY OF THE UNIVERSITY

(*Continued from Page 10*)

the university community is threatened is too little appreciated. It is said that Senator McCarthy had little fear of the wrath of either presidents or faculty but he did realize the alumni represented a lot of votes. No matter what views an alumnus may have about a particular issue he may come snarling out of his corner if he thinks unfriendly hands are about to be laid on his college.

There is a fourth large faculty concern, namely, the faculty *in loco parentis*. It is fashionable these days to resolutely deny that faculty have any such responsibilities. Certainly few students are willing to recognize any such authority. Both students and faculty, for their own reasons, find this presumed relationship distasteful.

The vacuum that is left is all the more complicated by the further vacuum in the accepted morality. The absence of authority, whether imposed or accepted, has created a great malaise in student-faculty relations, that, in unspectacular ways, is exercising a corrosive influence on the university community.

A new student morality has grown up reflecting their views of the rules of the game as they believe they are followed by the adult world. The essence of the new morality is the proposition that no private act is immoral of itself, but only as it offends others or damages the reputation of the institution of which one is a member.

But private acts that cannot be

judged involving behavior, involving sex, liquor or drugs, lead to the idea that individual behavior is nobody else's business except the individual's. If actions are kept quiet — so the new morality would have it — then no complaint can be made, not just by parents, not just by faculty, not just by other students, not by anybody. In short, there has been a complete unhinging of individual behavior and social concern. The connection between private acts and social good has been cut, and individual behavior is morally justifiable as long as no one else knows about it. We do subscribe to the notion that we are not our brother's keeper.

The result is that matters of individual behavior are now judged by superficial standards, namely, did they or did they not adversely affect a second party? Was or was not caution exercised to maintain privacy. And was the institution really damaged by some individual act? Discretion has become the test of morality. And with discretion the test, the issue is lost.

The net effect is to state that the individual may do with his life what he wishes. The end of this line is to admit of the right of self-destruction, and any society that admits of the right of self-destruction is in deep trouble because it then renounces the inviolability for the individual spirit and individual personality.

But I repeat this model has been learned by observation of the adult world and we have given plenty of evidence that we operate on just this model. As long as a faculty will not

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dismiss a member of a faculty for the nature of the private act but rather for the reason it became known; as long as the head of a bank will not dismiss a vice-president as long as he keeps his derelictions private, just so long will the new morality appeal to the student. We cannot expect him to be content with a double standard with one rule applying to him while another applies to the adult world. It just isn't acceptable and since we are not prepared to enforce a double standard, in any event, the whole idea is academic.

The fact of the matter is we have lost an understanding that a valid social concern for family cohesion supports chastity, that hope for a reasoning world requires sobriety, and that the need to cope with the real rather than a fanciful world is behind our restrictions on the use of drugs. We must somehow re-establish the social purposes behind the private rules of

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morality, and this is primarily the responsibility of the adult world. When this responsibility is accepted, we shall be able to affect both the doctrine and the pattern of individual student behaviour, but not before.

There is always a tension between the private life and social responsibilities of individual members of society, which means there is also a tension between the necessity of leaving others alone but not renouncing all responsibility for their health and welfare. I think a point can be made that the student in his pre-adult world has been too far detached and left too far alone by the adult world, including the faculty in the university. To state that they are not in *loco parentis* is merely to state a formalism. In fact, they are very much *in loco*, whether *parentis* or otherwise, but they are the adult world the student knows, and their views on morality will continue to shape student morality.

The reflections prompted by these two examples is that on all fronts faculty is the great standard maker of the university community. It determines the level of excellence at which the university will operate but it no longer directly controls the university ailerons. It determines the nature of community morality by the extent to which they can re-establish the connection between the individual behaviour and the larger purposes of life. It may be that there are more important contributions to be made towards the stability and vitality of the university community but I cannot think of them.

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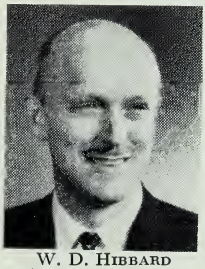

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Volume Twelve **Number Four**

June 1966

THE COVER (by Ken Bell of Art Associates Limited): This year our football Blues beat out Alberta Golden Bears for one national title and the hockey Blues won over St. Francis Xavier and then Alberta for another. This pleasant, even unusual, double-barrelled achievement coincided with another happy event: the 34th "birthday" of Warren Stevens as Director of Athletics. Helping Steve decorate the cover are football co-Captain Bryce Taylor and hockey Captain Bob Awry. *See page 28.*

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Venturing in front of and behind stage with his camera, Bob Lansdale recorded the atmosphere and spirit of the International Drama Festival. The picture story begins on page 31. In the picture above are two of the players in the Festival, sponsored by the International Student Centre.

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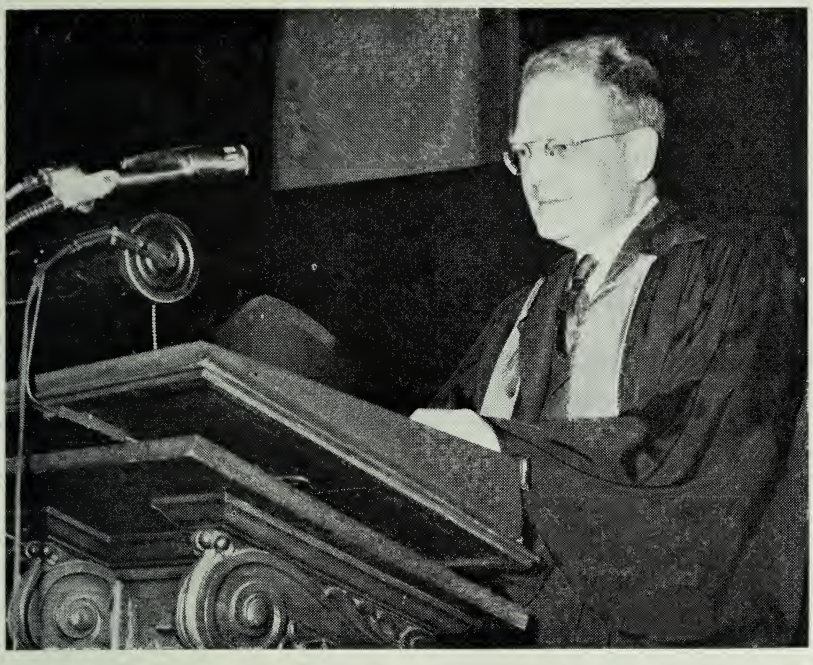
Northrop Frye's *Iliad*: the Alexander Lectures 1965-66

Peter Buitenhuis

Around four-forty-five on a grey March 17 of this year, a large crowd of people surged over the snowy, muddy football field on the Front Campus of the University of Toronto. This was no gathering for a game, however, but the audience for the first Alexander lecture to be delivered by the Principal of Victoria College. Everyone had been turned out of the Hart House theatre which had overflowed long before four-thirty when the lecture had been scheduled to begin, and so ensued the trek to the great spaces of Convocation Hall, which was over two-thirds full when Professor Clifford Leech finally rose to introduce Professor Frye.

It was one more demonstration of the great following that Frye has at Toronto, a following that did not at all diminish for the subsequent two lectures in the series: "Fools of Time: Studies in Shakespearean Tragedy," although each lecture was tightly written and intricately argued. It was the first time that the series, one of the most distinguished in English studies in North America, had been given by a member of the University of Toronto. Another factor conspiring to make the series a local event of magnitude was that, as Professor

Dr. Buitenhuis is Associate Professor of English in Victoria College



Our first "University Professor"

After seven years as Principal of Victoria College, Professor Northrop Frye has been appointed the first University Professor, while retaining his professorship in English at Victoria. Relieved of the responsibility for administrative work, Professor Frye will be able to devote his prodigious talents to the benefit of the University at large.

He has lectured at about a hundred universities in the United States, Canada, Great Britain and Ireland, and has taught a full term or a summer session in Harvard, Columbia, Princeton, Indiana, Washington, and British Columbia.

Professor Frye's major publications are: *Fearful Symmetry: A Study of William Blake*, 1947 (Dame Edith Sitwell praised its "huge scope and fiery understanding"); *Anatomy of Criticism*, 1957; *The Well-Tempered Critic*, 1963; *The Educated Imagination*, 1963; *T. S. Eliot*, 1963; *Fables of Identity*, 1963; *A Natural Perspective*, 1965; *The Return of Eden*, 1965. He has edited eleven books, contributed essays and chapters to about two dozen others, and his articles and reviews in learned journals number about eighty.

The new appointment, which becomes effective on January 1, 1967, is a fitting recognition of what Northrop Frye has done to stimulate and hearten the academic world.

Frye noted in his introductory remarks, the invitation to give the lectures came to him at the same time as the news of the death of Professor A. S. P. Woodhouse, who left so deep a mark on the study of English literature at Toronto, as indeed throughout Canada. Professor Frye dedicated the lectures to his memory.

The three lectures followed a pattern similar to that which had shaped the four that Professor Frye had delivered at Columbia University in November, 1963. These have been published under the title *A Natural Perspective, the Development of Shakespearean Comedy and Romance.* In the preface, Frye remarks that he was taking a different perspective from the one usual to Shakespearean studies – that of commenting at length on individual plays. He was, he said, retreating "from commentary into a middle distance, considering the comedies as a single group unified by recurring images and structural devices." The method of the middle distance, as it might be called, has in fact been Frye's main technique ever since *Anatomy of Criticism* (1957). Only a critic with encyclopaedic learning, incisive judgment and powerful organising skill, like Frye, can use such a method, for it is fraught with dangers. It would be all too easy for most critics using this technique to get lost in generalities and easy analogies, and for them to impose patterns on the literature under discussion instead of elucidating them. But the hallmark of Frye's writing is a lucid accuracy deployed within a steely structural framework of ideas. Moreover, humanising what might otherwise be an almost overpowering magisterial authority in his work, is a recurrent glint of sophisticated wit and humour.

In the first section of *A Natural Perspective*, Professor Frye alluded to his own bias as "an Odyssean critic," one temperamentally attracted to comedy and romance, in distinction to the "Iliad critics" – those who are attracted to tragedy, realism and irony. In writing these Alexander lectures, apparently, Frye had to overcome his own temperamental bias in order to treat tragedy. There is no sense, however, that he is unhappy on the plains before Troy, any more than he was on Odyssean seas. He confronts the dark world of Shakespearean tragedy with an austerer vision than he did the comedies, naturally, yet he affirms in them the same life-giving qualities. Indeed, one of his major points in these lectures is that the tragic vision "individualizes the audience," makes each one aware of his being as a creator, whereas comedy shows him the function of being a member of society, a creature.

The first lecture was entitled "My Father As He Slept: the Tragedy of Order". Later in the lecture Frye named the three major tragedies of order: *Julius Caesar*, *Macbeth* and *Hamlet*, but he was first of all concerned with definitions and structures, the relation of the tragic form to the nature of life. He began:

'The basis of the tragic vision is

being in time, the sense of the one-directional quality of life, where all experience vanishes, not simply into the past, but into nothingness, annihilation. In this life death is, not an incident in life, not even the inevitable end of life, but the essential event that gives shape and form to life. Death is what defines the individual, and marks him off from the continuity of life that flows from past to future. It gives to the individual life the parabola shape, rising from birth to maturity and sinking again, which is also the typical shape of tragedy.

'Being in time is not the whole of the tragic vision: It is, in itself, the ironic vision. Because it is the basis of the tragic vision, the ironic and the tragic are often confused or identified, especially in our own post-tragic era. The nineteenth-century pessimism which produced the philosophy of Schopenhauer and the novels of Hardy seems to me ironic rather than tragic. So does the philosophy and literature of existentialism. But tragedy, no less than irony, *is* existential: the conceptions that existential thinkers have tried to struggle with, care, dread, nausea, absurdity and the like, are relevant to the theory of tragedy. Tragedy is also existential in a broader, and perhaps contradictory, sense, in that the experience of the tragic cannot be moralized or contained within a philosophical or religious world-view. A conceptual system that solves all problems, and finds a place for tragedy only to explain it away as part of a larger and less tragic whole, cannot absorb the kind of experience that tragedy represents. The remark of the dying Hotspur, "Thought's the slave of life," comes out of the heart of the tragic vision.

'Tragedy revolves around the primary contract of man and nature, the contract fulfilled by man's death, death being, as we say, the debt he owes to nature. What makes tragedy tragic, and not simply ironic, is the presence in it of a counter-movement of being that we call the heroic, a capacity for action or passion, doing or suffering, above ordinary experience. The heroic suggests something infinite imprisoned in the finite, and man may be infinite if he is infinite only in his evil desires. By itself, this heroic energy is the basis of romance: in tragedy, the heroic is within the ironic context, formed and shaped by death. In Greek tragedy especially we can see how death is both the punishment of the aggressor and the reward of his victim. This makes tragic sense, if not moral sense. Things outside nature, such as ghosts, omens, portents, oracles, magic, witchcraft, are not primarily marvels in tragedy: as things experienced, they threaten us with madness: as things conceived, they show the limited and finite nature of experience. The fact that an infinite energy is driving towards death in tragedy means that the impetus of tragedy is *sacrificial.* Sacrifice expresses the principle that in human life the infinite takes the same direction as the finite.

'Tragedy, then, shows us the im-

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pact of heroic energy on the human situation. The heroic is normally destroyed in the conflict, and the human situation goes on surviving. "A living dog is better than a dead lion," says the Preacher: whether better or not, the dialectic of tragedy works through to a situation in which the heroic is normally dead and the less heroic is all that can remain alive. Tragedy often ends with the survivors forming a secondary or social contract more modest in its aims and desires than tragedy. Fewer ghosts will walk in the worlds of Fortinbras and Malcolm; Antony and Coriolanus are succeeded by Octavius and Aufidius, shrewder and more prudent men, but smaller men. The sense of the falling away of perspective after the great heroic voices have been silenced comes out in the last lines of *King Lear*:

> The oldest hath borne most: we
> that are young
> Shall never see so much, nor live
> so long.

The more ironic the tragedy, the fewer the central characters who die. In *Troilus and Cressida*, though the setting is a battlefield where men die like flies every day, none of the central characters dies except the greatest of all, Hector: in *Timon of Athens* nobody dies except the only noble character, Timon. Our first tentative conclusion about the feelings roused in us by the tragic experience, therefore, is something like this: the heroic and the infinite have been; the human and finite are.'

This long quotation gives a good

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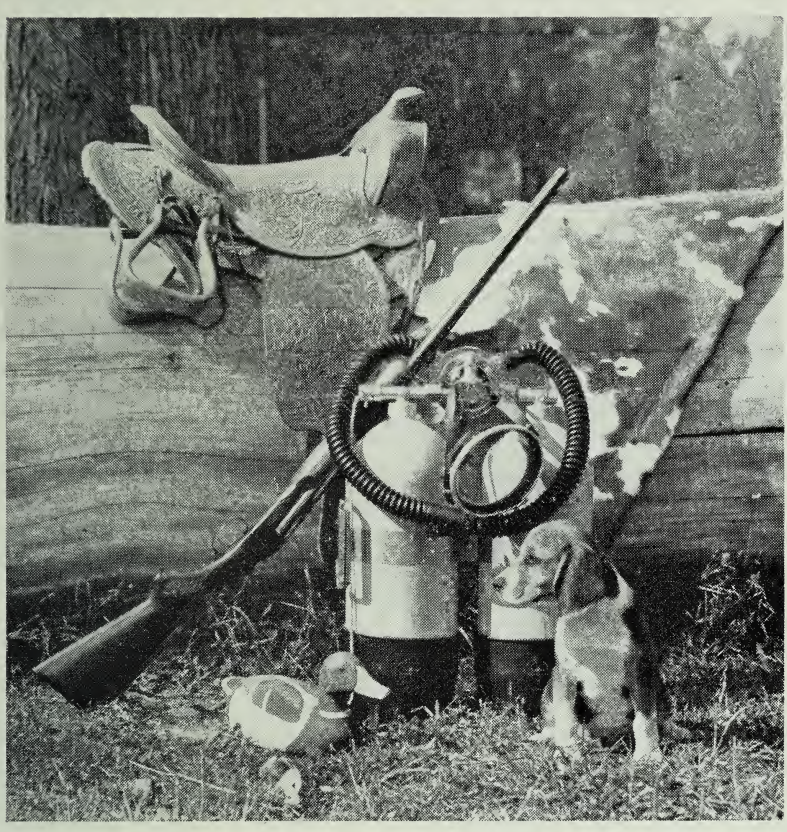
indication of Professor Frye's method and style—and also why any kind of a précis of his arguments will fall far short of the original. But the pages of this publication cannot be infinitely expanded, and I must resort from now on to short quotations and lame paraphrases.

After this introduction Frye went on to define the nature of Greek tragedy and to refer to Nietzsche's description of the "Apollonian" side of Greek culture – that which is limited and finite – and the "Dionysian" – its sense of infinite heroic energy. Frye uses these opposing but complementary terms throughout these lectures and expands them to embrace many of the complexities of Shakespearean tragedy. Moreover, by reference and quotation, Frye shows that Shakespeare was well aware of these conflicting principles in his tragic actions. But unlike the Greeks, the Elizabethans had little use for the gods, which they saw as personifications of natural forces. For the Elizabethans, the human ruler tends to become the centre of the action, and the relations of the ruler and his people take the place of the relations of gods and men. The church and its teachings are subordinated to the secular interest: the figure of the proud cardinal, whose crimson robes make him a natural dramatic focus, is the popular symbol of this.

As so often in his criticism, Frye uses symbolism not only to explicate the work of art, but also to organise what he says about those works. In *Fools of Time*, the dominant symbols are the order of nature and the wheel of fortune.

Nature and fortune are not antithetical; they interpenetrate. Man lives in a state of nature on two levels, that of the jungle, or aggressiveness, and that of specifically human nature, which has reference to a golden age, now lost. The king symbolizes the invisible ideals of social discipline, although he does not incarnate them. The king, too, is subject to lower nature and fortune's wheel. The image that Shakespeare uses of the kingdom in *Richard II* is that of the garden, not the garden of Eden, but the one that man was forced to cultivate, in constant effort and vigilance, after the fall.

The relationship of this series of lectures to the ones that Frye delivered on Shakespearean comedy was revealed when he went on to define Elizabethan tragedy as the reverse of the structure of comedy. In comedy there are three kinds of drives towards identity: the social, the erotic and the individual. Similarly, in tragedy there is, firstly, a social tragedy, concerned with the fall of princes; secondly there is the tragedy of the separation of lovers, the conflict of duty and passion; and thirdly there is the tragedy in which the hero is removed from his social context. These three divisions are what, for short, Frye calls the tragedy of order, the tragedy of passion and the tragedy of isolation. He stressed that these categories were not pigeonholes, but that most of Shakespeare's tragedies have aspects that link them with the



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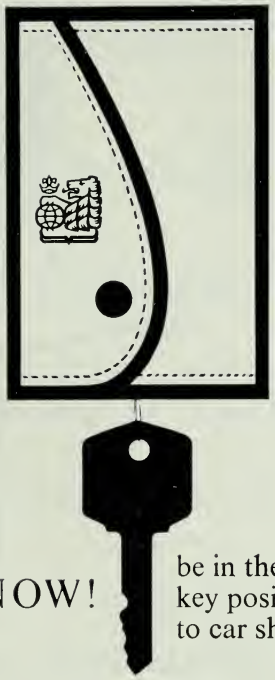
other types. Shakespeare's social tragedies, or tragedies of order, are *Julius Caesar*, *Macbeth* and *Hamlet*.

The tragedy of order shows, much more clearly than the other two kinds, the impact of heroic energy on the human condition, the wheel of fortune creaking against the greater wheel of nature. Society to the Elizabethans was a structure of personal authority, with the ruler at its head. Everybody had a superior, and this fact, negatively, emphasized the finite nature of the human situation. Positively, the fact that the ruler was an individual with a personality was what enabled his subjects to be individuals and have personalities too. This view corresponds to Nietzche's "Apollonian" sense in Greek culture. That makes it hard for us to understand it. We ourselves live in a Dionysian society, with mass movements sweeping across it, leaders rising and falling, and constantly taking the risk of being swept into a featureless tyranny where all sense of the individual disappears. We even live on a Dionysian earth, staggering drunkenly around the sun. It puzzles us that the people in *Julius Caesar* and *Coriolanus* seem to represent nothing but a potential response to leadership. We are apt to assume, like Brutus, that leadership and freedom threaten one another, but, for us as for Shakespeare, there is no freedom without the sense of the individual, and in the tragic vision, at least, the leader or hero is the primary and original individual. In no period of history does Dionysus have anything to do with freedom: his function is to release us from the burden of freedom. The last thing the mob says in both *Julius Caesar* and *Coriolanus* is pure Dionysus: "Tear him to pieces".

In Shakespeare's day there had been no permanently successful example of popular sovereignty. Machiavelli had assumed that there were two possible forms of government, popular governments, by their nature unstable, and principalities, depending for their stability on the strength and cunning of the prince. This argument horrified the idealists of the sixteenth century, who were concerned with the idea of the "general good" as well as that of stability, and Machiavelli became a conventional bogy in Elizabethan drama. From the point of view of tragic structure what Machiavelli was doing was destroying the integrity of tragedy by obliterating the difference between the order-figure and the rebel-figure.

The order figure, in Shakespeare, holds his position through a subtle combination of *de jure* and *de facto* authority. Legitimacy is a factor of great importance in the history plays, and even when the king is impossibly bad, as was Richard II, the seizure of power by Bolingbroke was an awful and portentous event. Richard is king *de jure*; Bolingbroke is the power *de facto*. At a certain point, however, the *de facto* power acquires the *de jure* attribute as well. He

(Continued on Page 98)



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Some Aspects of Higher Education South of the Rio Grande

An Interview with the President of the University

"WOULD YOU SAY some of us are inclined to forget how the other half of the Hemisphere lives?" we asked Dr. Claude Bissell after his return from visiting Colombia and attending a conference in Venezuela.

"I would say more than that," he replied; "I would say most of us have not the foggiest idea of what it is like to be a South American—especially a desperately-poor South American who is trying to acquire an education."

"How would you like to be a university student who starts his day with two slices of bread?" the President continued. "One slice with a cup of coffee is breakfast; the other you take to the university—with a bottle of pop it will be your lunch.

"At the university nothing much happens. There is no full-time staff, no sign of the professor who, let us say,

is supposed to give a lecture on Spanish literature. He is tied up at the local newspaper office, working on editorials for next day. It may be 5 o'clock before he arrives and then, with virtually nothing under your belt, you settle down to your first lecture. It may be well into the evening before your mathematics professor, the books at the bank finally balanced, calls his class to order. Such is life in a big university staffed by taxi-professors. Weary, weak from malnutrition, sick with frustration, you finally drag yourself back to your miserable lodgings and a modest meal."

This vignette was drawn from the reminiscences of the rector of one of three institutions Dr. Bissell visited in Colombia where he stopped en route to the meetings in Venezuela (the 1966 conference of the Council on Higher Education of the American Republics — CHEAR). His distinguished guide for the Colombian stopover was an old Latin American hand—Dr. James Perkins, President of Cornell University and, since last November, a University of Toronto Doctor of Laws, *honoris causa*. Dr. Bissell remarked that, because of Dr. Perkins, "what might have been fleeting impressions became instead significant seasoning for the South American background I had gained through reading and listening".

Tell us more about the taxi-professors [we urged].

This, fortunately, is a fading species [*Dr. Bissell replied*]. Until recently they were to be found in a great many Latin American universities. In what we call Arts and Science as well as in the professional faculties there were *no* fulltime members of staff. The genesis of "taxi-professor" was the apocryphal gentleman who arrived at his university in a taxi, rushed into a lecture-room with his notes under his arm, gave the lecture and then hurried back to the taxi before the meter had run too far for his purse. The story points up a deplorable situation more than it reduces it to the absurd. With no fulltime staff, the students became the only continuing element—which makes it easy to understand why South American students have a history of "taking over".

Do the students still assert themselves?

Indeed they do. On arrival in Bogota, about the first thing we heard was that the National University of Colombia was in trouble: the students had rioted the day before.

The harsh story we pieced together had a member of the faculty, a priest called Camilo Torres, as its central character. And it brought us face to face with problems that have not arisen and one feels could not arise in a Canadian university.

Torres, a young man from a wealthy family, was appalled by the misery he found on all sides. He threw himself into the fight for reform and became a chaplain of sorts to the undergraduates. In doing so he symbolized the growth of liberal groups within his church.

For Torres, however, the road to a better world proved too long and rocky. He was a victim of his own

frustration. First he "defrocked" himself, proclaimed that he no longer belonged to the church. Then he joined a wandering band in the country. Then he was killed.

The military said he had been shot in a skirmish with a patrol. His former students claimed that he had been deliberately murdered. They insisted that his body be turned over to them for burial and they rioted to back up this demand. The government refused on the ground that the funeral likely would develop into a much more damaging demonstration. How all was resolved I don't know. The day we left Bogota one of the newspapers had an editorial urging the university to open on time and "not to become a victim of political agitation".

These wandering bands—did they interfere with your travels? Did you see any violence?

Our only view of the countryside was from an airplane. A young exchange student from California told us that he had been warned never to travel by bus or train, but that he had done so with impunity.

On one sightseeing tour of Bogota we were about to approach an old church when we spotted a group of soldiers holding curious little screens that looked like collapsed fish nets made of something very tough. Our interpreter reconnoitred and returned to report with a grin, "They are expecting riots from any of three causes".

One of these was the students' cause and another had to do with a pay dispute involving government workers.

We saw no other signs of violence in Colombia.

You didn't feel you were in a police state?

I had no feeling in either Colombia or Venezuela of being in a heavy police state. In Bogota, for example, there was full discussion of the Camilo Torres case in the press. However, no official government occasion was complete without soldiers carrying those short rapid-fire rifles that appear to be direct descendants of the Sten gun.

Did you see other signs of students flexing their muscles?

Oh, yes. This is pretty general in Latin America. Some students may be undernourished—but they don't always act that way. When I was in Caracas the medical students were on a hunger strike! They were protesting a recent regulation barring a student if he failed twice.

The Rector of the university, the man responsible for the regulation, had a rather curious attitude. He defended the striking students and put the blame on the government for not providing enough places.

The question some delegates wanted to ask was, "If these people fail twice, how can they be considered as acceptable candidates for a medical degree?" Such questions overlook the Latin American passion for prestige. Law, medicine and—increasingly—engineering are looked on as the prestige professions—"and by heavens if my son can't achieve this status then something should be done about it!" Nobody replied, "If your son is incapable of achieving this status there should

be something else for him." This constitutes a great gap between the universities and the obvious needs of the countries.

The Colombian universities—are they like Varsity?

I couldn't generalize. Dr. Perkins and I saw three—and it is hard to conceive of three institutions differing more, each from the others.

The first we visited was the University of Los Andes in Bogota. This is a private university which operates with minimal government support. The fees of 8000 pesos—about 500 dollars—are very high in terms of the general economic level of the country.

The Rector said they offered scholarships that enabled them to draw about 25 per cent of their students from the less privileged classes. The other 75 per cent were from the upper middle class or, indeed, the upper class. The way these young men and women dressed, and their manners, were most impressive. Those we saw were obviously from well-to-do homes.

The university, built on the side of a mountain, had attractive characteristics. It was not a lavish university. As we inspected the buildings, some temporary, some taken over from the government, a few that were new but quite modest, the realization grew that there was a tremendous gap between the resources available here and those available anywhere in Canada and U.S.A.

You touched on the co-educational aspect: are women well represented in universities down there?

I have no statistics. But the students at Los Andes were predominantly and attractively feminine. Some of them looked as though they had just emerged from *Vogue* or *Mademoiselle.* They dressed with great style. As I remarked earlier, we saw no students at the National University which we visited next.

The one that had the riot?

Yes. There we learned about the dilemma of the Latin American university. The story was told by Dr. Patino, the Rector, a young surgeon who had been educated at Yale. I have never heard anyone whose native tongue was not English use the language more effectively. He spoke with brilliance and absolute, logical concision. I learned afterwards that he belonged to a prominent family and had served as federal Minister of Health.

The National University, he said, was for the people. I did not ask about fees: I just took it for granted there were none. There were 13,000 students, most of them from poor families where the mother has about twelve pregnancies and perhaps six children survive. With candour Dr. Patino described the iniquities of the taxi-professor system. But he also emphasized the reforms that had taken place, presumably under his guidance. He said the change-over to a fulltime staff was well under way.

Traditionally, he told us, Latin American universities had been conservative and rigorously professional in the European tradition. Going to a university was simply a way of preparing for a profession. The course was not described in general academic

At the Medical School in Caracas, Dr. Bissell stops to inspect a poster announcing: "We have been on solidarity hunger strike for 197 hours"

terms: instead, one entered upon a course that had a specific professional goal. This led to a high degree of conservatism because professions are conservative.

In their attack on this pragmatic clutter Dr. Patino and his colleagues at the National University had reduced their faculties from 27 to 10 he said. Then he added, "We have given a new primacy to the sciences." Although my attitude might have seemed curious for a humanist, I applauded this.

The old South American university had been pretty well attuned to law, and in a broad sense to the humanities. Medicine, as well. More than once I have heard favourable comment about standards of education in some of their medical schools. But as for science in general—very bad.

Now, Dr. Patino assured us, a new primacy has been given to science. the humanities are not being neglected but they are receiving a more appropriate emphasis. And financial support from government has grown enormously. But then he said: "Don't get the idea that everything is solved; we still have tremendous problems."

Elaborating, he told us that only two per cent of the college-age group go on to university.

Earlier Dr. Perkins had spoken of the open-door policy in the old Latin American universities. Anyone who graduated from high school—and the high schools are not good—qualified for university. This led to a hopeless impasse in the first year.

I asked Dr. Patino if this situation still existed at the National University, which I gathered was at the apex of the educational system.

He replied they were becoming more selective, that only 17 per cent of those who applied got in.

So I asked him, "What happens to those who don't get in?" and he said laconically, "They join the revolution."

This is the great problem, not only at the National University but elsewhere.

Adventure in the Valley

From Bogota we flew 300 miles to Cali, an attractive city of close to a million. This is Colombia's southern capital. On the outskirts, on a modest campus, we found the University of the Valley, the third we were to visit.

It was, an officer of the Ford Foundation had told me, in many ways a model university. We found it to have a strong bent for the experimental. At the top were extraordinarily good people. This was true of the universities we visited: the people at the top were lively and able. And there was a good deal of educational ferment. At both Los Andes and the Valley we heard much talk about the importance of a general liberal education as a means of preparing students for service to the state—providing the "CEMENT" for the new society as Dr. Ramon de Zubiria, the rector of Los Andes put it! This was a revolutionary idea in the traditional South American context.

The University of the Valley is a state university with fees non-existent

or negligible, and in that sense is like the National University. But it is smaller and away from Bogota. They are happy at being away from the capital, with its heavy bureaucratic concentration.

Some years ago the University of the Valley decided to broaden the urban facilities of its faculty of medicine by starting an outpatients' clinic in a small town. The place they chose was Candelaria, about 20 miles from Cali. This decision led to others which, taken together, provided dramatic illustration of a university's potential as a civilizing force. The Rockefeller Foundation—which acted as banker—was a powerful ally along with U.S.-trained personnel who shared the leadership.

You say one thing led to another?

That's what happened. Candelaria, I should mention, was made up almost entirely of workers in the sugar fields and their families. At the clinic it soon became apparent that the town had public health problems—real problems. The diseases involved could have been caused by the absence of sewers. The government had installed trunk-line sewers eight or ten years before, but had never connected them to the houses!

At that stage the university's department of sanitary engineering moved in. It was headed by Dr. Patrick Owen, a visiting Rockefeller professor. Dr. Owen declared the area a practical laboratory for his students. Under their supervision, the big job of connecting individual houses to the main sewers began.

That solved the problem?

Partly. But other cases at the clinic were traced to insects that usually have nothing to do with sewers or lack of them. Good detective work directed by Dr. Guy Hayes and Dr. Joe Rae—both Rockefeller professors—traced the culprits to the mud walls and thatched roofs of the sugar workers' homes. These houses made interesting snapshots for tourists, but were most unsanitary.

So the Rockefeller people with the help of Colombian colleagues and their students set out to convince the townsfolk that they would not get rid of their ailments until they got rid of their homes. At some stage, along with economists and sociologists, the engineering dean, Dr. Etchiverry — another Rockefeller professor, not a quarterback! — began to play a significant role in all of this. It was demonstrated that simple but pleasant dwellings could be built at low cost with bricks native to the area. Soon a transformation in housing was under way.

Visiting that little town was a dramatic experience. There it was — a revolution taking place before our eyes. Not too distant were the old thatched cottages, obviously sickly children on the roads, no sewers. In Candelaria the children looked as though they were living normal, healthy lives.

The University of the Valley had bridged the gap between knowledge and its implementation. Barriers had been wiped out between the scientist and the engineer and the sociologist and the citizen who was still living

two or three hundred years in the past.

The citizen, of course, was the key. A worker in the sugar fields had to be convinced it was to his advantage to link his home with a trunk-line sewer —that it was to his advantage to build with brick instead of mud and straw.

It was exhilarating just to be a bystander or passerby. And much more exhilarating for those who were part of it. One of the Americans said to me, "I wouldn't go home if you paid me; this is the greatest thing I have done in my life."

All those American professors—would you call this a Rockefeller Foundation project?

Well, it couldn't have happened without the Americans. At least not yet. And still it impressed me as a *Colombian* achievement with help from wealthy friends. Rockefeller Foundation funds and U.S. foreign aid were involved. It seemed a marvelous way to help a developing country. I kept asking myself why the same experiment wasn't being tried elsewhere in Colombia and in other countries, too.

Of course, this business of sending academic reinforcements from North America to South America is not all plain sailing. As the Dean of Medicine at the University of the Valley pointed out, there is little to be gained by having a professor go down there for a year. Even if he knows the language it takes him about six months to become adapted to conditions. That doesn't leave much time to teach.

The Dean said he would like to see a greater flow of graduate students to North American universities and the growth of informal relationships between departments north and south. It was his hope that senior professors from the north would visit South America periodically and advise on the development and structure of given disciplines.

Did these references to the north include Canada?

Usually the conversation turned upon the question, "What can the United States do to help us?" Then someone would glance at me and politely add "Canada." It was obvious that Canada had not really entered into their thinking.

Had any of them heard of Toronto?

Oh yes. A Mexican rector who had visited Toronto seven or eight years ago had a lively memory of activity here in Spanish. He had been impressed by our library holdings in Spanish and by the fact that U of T was then giving instruction in that language to about 500 students. I told him I guessed the number had doubled since his visit. Actually I was a little conservative in my estimate.

In Candelaria, one of the Rockefeller people asked to be remembered to John Hamilton. He recalled an accrediting mission to Laval – and the tactful way the Dean had chaired the group charged with assessing the status of the medical school there.

Did you encounter a single Canadian at any point on your safari?

Just once. It was at the Institute for Scientific Investigation in Caracas. Our man was the head of virology there – Dr. Gernot Bergold – a Canadian born

in Austria. He told me he had come to North America after the war, intending to settle in the United States. But when he discovered he would have to engage in scientific work of a military nature, he chose Canada and obtained a government post at Sault Ste. Marie. He stayed there 11 years before moving on to Venezuela. His memories of the Sault were affectionate, but he agreed the climate was less salubrious than the one he was enjoying in Caracas.

What happened at the CHEAR meetings?

We began with reports from three committees. CHEAR, you see, is more than a conference: it is an organization with a continuing program of research in Latin America. One committee reported on the state of planning in higher education, another on the place of political science in the curriculum. The third was concerned with demography and the extent to which it should command attention in universities. This was the program for the first session.

The three major themes before the conference were the university's responsibilities in conservation of natural resources, the university and urbanization, and the role of the student in university government.

From my point of view these topics were interesting on an ascending scale. The last was by far the liveliest. I was particularly interested in the presentation of the Latin American point of view. The main spokesman was Dr. Ignacio Gonzales, Rector of the University of Concepcion in Chile.

Dr. Gonzales said most Latin American universities agree students should be represented on their governing councils. He observed that, contrary to common assumptions, this can lead to a rigid conservatism. The students are concerned with protection against ejection for academic reasons. One wonders to what extent student grievances in Latin America are concerned with the educational structure — and to what extent they are assertions of the right to get a degree regardless of their academic accomplishments.

Summing up, Dr. Gonzales held that students are inclined to become legalistic apologists for themselves — and that student representation on a governing board is unlikely to nudge a university towards radical innovation.

This led to general discussion of the student as a political animal and of what was called "politicization" of the university community.

Earlier I mentioned Dr. Bianco, Rector of the local University of Caracas. Dr. Bianco argued eloquently and emotionally for political action by undergraduates.

Students, he reminded us, had been the motivating force in the Venezuelan revolution eight or nine years earlier. President Leoni had been a student leader. In many Latin American countries it seems inevitable that students will be, in a sense, part of the official opposition to an autocratic government. This, Dr. Perkins pointed out, is one of the conditions that lie behind student discontent and revolt. Other

conditions are less explosive. They are: lack of co-ordination between student aspirations and the academic fact (the university may either be too demanding or too lax); the absence of any strong administrative control and direction at the centre; a tradition, as at many European and Latin American universities, of student independence.

Are the universities of Colombia and Venezuela very different?

There was no opportunity to make a careful comparison. For most of our stay in Colombia, we were looking at universities. At Caracas, because of the conference, I could spend only a few hours at the central university. The university at Caracas is physically quite splendid. In contrast the National University, which is the comparable one in Colombia, has the appearance of poverty by even the meanest North American standards.

Did the Caracas campus remind you of Varsity?

In a way it did. Some of the problems are the same. It was on the outskirts of the city to start with and now is ringed around by commercial buildings. That development took about ten years in Caracas and about a hundred in Toronto. In addition to many splendid buildings, one was struck by a wealth of sculpture and murals on the Caracas campus. Enrolment is in the 20-thousand range at Caracas but more of the students are part-time.

The hunger strike by medical students: was it causing much excitement?

Not that I noticed. There was no suggestion of tension. I got the impression that this was routine event.

Is there widespread evidence of the wealth that comes from Venezuelan oil?

Yes, but at the same time Venezuela has *the* great classical pockets of poverty. Caracas must have the widest gap between rich and poor of any city in the world. Many of the affluent are internationally educated and live in opulence. Their treasures are drawn from all over the world. But clinging to the hills of Caracas are, I suppose, the most shocking slums in the world. They are really vast compounds ringed around with wire fences.

Something like Rio?

And like Hong Kong. The shack towns climb up the hills. They're jammed together. Some people dismiss them with the comment: "These are people who come in from the countryside — not very anxious to work — the climate allows them to live in this kind of squalid poverty without too much discomfort." I presume there is no sanitation, no amenities. But they are close to the city — right on top of it.

Did the university show a concern for these conditions?

South American friends pointed out placards throughout the campus. They bore pictures of children in the barios, as they are called. In large type was the exhortation "Students — Volunteer for Work in the Barios".

Sounds a little like getting Varsity students to go to Asia and live in poor villages for a year or so.

It's much the same, I suppose. But no oceans to cross. They just climb the hill. And within the university there obviously exists a keen sense of the problem. Many thousands of people living completely anonymous lives. There seems no way their existence could be recorded because they don't live street by street — just in those little shacks jumbled together. How long, one wondered, could this disparity exist?

When the President of Venezuela received us he said housing was the country's greatest problem. Now I don't pose as an economist, but it does seem unlikely that anything dramatic can be done in the area of low-cost public housing while the present tax structure remains. At the Institute for Scientific Investigation — where I met our one Canadian! — the director gave this illustration of their income tax. A married man with two children and making $17,000 a year would pay about five per cent of his income to the government. That's hardly the way to get families out of the barios.

Venezuela has a peculiar problem in relation to U.S. foreign aid. Because of the U.S. dollars pulled in by the petroleum industry, Venezuela's balance of payment situation is excellent. After he has looked at the figures and noted that — as a national state — Venezuela is fabulously wealthy, a Congressman balks at giving away money there.

But, because enough of its wealth is not filtered out through taxation into social measures, Venezuela desperately needs help and advice.

You mentioned urbanization as one of the conference topics?

It was a most important one. The growing concentration of population in big cities is creating enormous problems in the southern part of the hemisphere. Let me read you a few paragraphs from one of the conference working papers:

"In 1960 there were 207 million Latin Americans. By the year 2000 there will be almost 600 million according to UN projections. Urban population, which was 91 million in 1960, will be 354 million at the turn of the century. It is expected that 150 million Latin Americans will live in urban areas of more than a million people. . . .

"These enormous concentrations will become, if the present trends cannot be modified, motley, lawless complexes characterized by traffic congestion, contamination of the atmosphere and the subsoil, lack of adequate services. . . .

"One hundred million of Latin America's 200 million are illiterate. Tuberculosis and infant mortality rates are shocking. The sector of the population that has potable water available is only 58 per cent in the country showing the highest proportion and 2.5 per cent in the lowest. The accumulated housing deficit has been estimated at from 15 to 19 million units and is falling behind normal growth at a rate of 900,000 units a year. . . .

"Only five American countries have per capita annual incomes above $400.

(Continued on Page 26)

WELL MET IN CARACAS

Dr. Claude Bissell was the only Canadian invited to Caracas for the 1966 conference of the Council on Higher Education of the American Republics (CHEAR). There, in March, he joined delegates from eleven U.S. and eight Latin American universities in meetings sponsored by the Carnegie Corporation and the Ford Foundation. In the group at *right*, from left to right, are:

Dr. Walter Adamson,
Agency for International Development,
Washington;

Dr. L. R. de Carvalho,
Rector,
University of Brasilia;

Dr. Kenneth S. Pitzer,
President,
Rice University;

Dr. Bissell;

Dr. Arthur Roe,
National Science Foundation,
Washington;

Dr. Silvio Zavala,
Rector,
El Colegio de Mexico.

SOUTH OF RIO GRANDE

(Continued from Page 23)

In some the figure barely exceeds $100 and in one it is below $100. Per capita income in the developed countries is around $1500, except in the United States where the figure is much higher. . . .

"Urbanization, explosive and chaotic but also full of constructive possibilities, provides a field where the university is called upon to make a contribution. It is not by accident that five of the most important U.S. universities are now actively engaged in programs especially designed to develop plausible models of what the city of the future will be. . . ."

The research documents revealed the process of urbanization will be much more rapid and much more explosive than in the United States. It involves the movement in from the country of people who have no skills and who may create the kind of slums we saw in Caracas.

How did you visualize the university's role in all of this?

Much of the discussion boiled down to how the university could communicate its knowledge to those who need to implement it. Here is the old problem of the jump between those who know and those who are responsible for action.

Dr. Franklin Murphy, who is Chancellor of the University of California in Los Angeles, suggested the university had a somewhat similar role with respect to the city as it had to agriculture in the nineteenth century. Those were the years when the American university was the great innovating force in revitalizing agriculture through its agricultural colleges and research stations.

Dr. Grayson Kirk, who is in one of the most highly urbanized of all settings (as President of Columbia University in New York) questioned this view. When the university was dealing with agriculture, it was dealing simply with an area which cried out for development and where there were no forces impeding this. In the city, dealing with building regulations and with types of housing and their distribution, the university as a spokesman for the idea of planning runs into entrenched forces, economic and political forces, traditional forces.

One point I made — and others made it, too — was that while urbanization problems are increasing the university is becoming more and more of an urban centre in its own right. The modern university or multiversity has big-city problems, namely to secure unity, inter-relationship and a sense of purpose, and to be conscious of its aesthetic environment. And if it is true that the university has not quite acquired some of the external blights of the city, it has on occasion come close to it.

Dr. Murphy referred to the pox of billboards. The University is mercifully free of that, but it has the pollution of parking — another indication of the similarity between the problems of the urban community and of the university. It was important for

us in the university to be conscious of ourselves as a planning unit. Although we might not become a new Jerusalem, we should strive to become at least a preliminary model for it.

The crux is how to convert knowledge into action. We have plenty of urban planners to tell us what we should do — they tell us every day what we should do — and then we blithely go ahead and do the opposite. This is because there are economic and social pressures which steamroller over the best theoretical information.

We spoke of the need to emphasize beauty, not as a sort of rare dividend, but as a practical necessity for living. As people become jammed together more and more, the need for release from grime and squalor becomes a survival necessity.

We've talked for some time: it shakes me to realize how few references have been made to Canada.

In each country I had no chance to talk to the Canadian representatives because they were away. And apart from some business ventures Canada cannot figure to any large extent in a South American story because of our policy of withdrawal.

The dominating voice is, of course, the United States. The Ford Foundation, Rockefeller Foundation and other such organizations are deeply involved. And attached to every U.S. embassy is a representative of the foreign aid program. The representative in Colombia was a Rhodes scholar from Colorado, an extraordinarily impressive person.

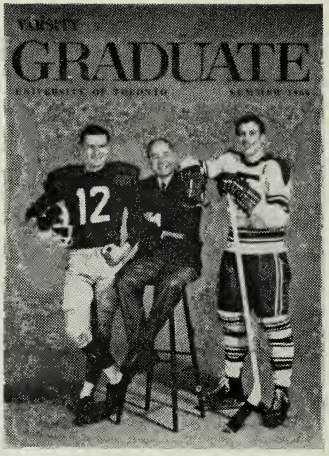
The problem of the U.S. foreign aid program is to intervene without appearing to intervene — to try to implement social changes without suggesting that the great power of the north is behind them.

A Latin American is quick to extend his hand to Canada. Time and again I encountered people who told me they had met Professor Kurt Levy who did so much to help Professor Stagg launch our honour course in Latin American Studies last autumn. Professor Levy spent about a year in Latin America and lectured at many of their universities while preparing for that event. Moreover his sister has been living in Bogota for about thirty years and is an instructor in English at the Latin American Institute.

That article you published about the course in VARSITY GRADUATE last year — the one by Crawford Grier. Several people produced clippings to show me how it had been translated for Spanish and Portuguese-language periodicals down there. They talked about this important innovation and the evidence of Canadian interest with real warmth.

The most enthusiastic booster for Canada was Señor Piñeros who had been posted to Ottawa as Colombian ambassador. He recalled his years in Canada and some of his experiences here with unfeigned delight. He said he remained hopeful that cultural and academic associations could be developed.

Obviously there is a great role for Canada to play in Latin America. All we need to do is start. *KSE*



"What's Rugby?" asked the young man from Syracuse

Shel Krakofsky

On April 1, Warren Stevens began his 35th year as Athletic Director at University of Toronto. Stevens works behind a desk now, but in years gone by he was the most feared man behind an offensive line in Canada. It was Steve who brought the forward pass to Canadian football.

He was born in Syracuse, New York and attended Syracuse University where he played basketball and captained the baseball and football teams. He was a star halfback with the Syracuse team and won All-American mention in his graduating year, 1931.

The forward pass has been a large part of the American game since the early 1900's when President Teddy Roosevelt was instrumental in legislating for its acceptance but the forward pass was not a legal part of the Canadian game until Stevens arrived in the fall of 1931.

This article by Mr. Krakofsky appeared originally in *The Varsity*.

Frank McGill, coach of the Big Four team, the Montreal Amateur Athletic Association Winged Wheelers, and Frank (Shag) Shaugnessy, coach of the McGill Redmen, who was later to become president of the International Baseball League, enticed him to Montreal.

When they asked Stevens to come to Canada to play rugby, his first reaction was to ask, "What's rugby?"

Shaugnessy explained to Steve that Canadian Rugby was similar to American football so Steve went to play quarterback for the M.A.A.A. Winged Wheelers and help coach the McGill intercollegiate team.

Steve still remembers the first pass he threw in Canada — the first legal pass ever thrown in Canada. It was to

CANADA'S FIRST FORWARD-PASSER, *below*,
IS SEEN WITH HIS FOOTBALL AND HOCKEY CAPTAINS, *facing page*.
THERE WAS A TIME-LAG OF THIRTY-FIVE YEARS BETWEEN THE TWO PICTURES.

his end Frank Robinson who later complained, with a chuckle, "Nobody ever talks about the guy who caught the first pass."

Wheelers went romping through six Big Four games, six exhibition games and two playoffs to the Canadian championship and the Grey Cup.

Steve completed 68 out of 141 passes for a 48.2 percentage in those fourteen games, an outstanding record when you consider his receivers had caught only lateral passes in a game before Steve crossed the border.

The first touchdown pass ever thrown in a Grey Cup was a 40-yard effort from Steve to Kennie Grant in the third quarter against the Saskatchewan Roughriders.

Stevens also converted a touchdown in that game by faking a placement and running over the line with the ball, the first time the play was used in Cup final. Winged Wheelers went on to win the '31 Grey Cup 22–0.

Commenting how the game has so vastly changed since he donned the pads and cleats, Steve said "If you threw 10 passes in a game you were considered fantastic."

In the Grey Cup final, Steve threw three passes for 101 yards and drew national acclaim.

Throwing a forward pass was nothing new to Stevens when he came up from the States. "I never knew anything different," said Steve in prefacing a humorous story about his first game in Toronto against Argonauts.

During the pre-game warm-up, a messenger boy handed Stevens a note which simply stated, "Throw a forward pass."

Steve looked into the stands and a fellow from the press box was waving at him to throw a forward pass.

"Shucks," says Steve, "I thought the guy was pulling my leg."

Soon the messenger boy came down with the same note, only this time it was signed, "Lou Marsh." Stevens enquired who this fellow was and when he found out it was the sports editor of the Toronto Daily Star, he threw a short pass to which the fans responded by loud applause.

The messenger boy came back with another note from Marsh, "Throw a LONG forward pass," it requested.

So Steve threw a long pass and there was loud cheering from the stands and a ripple of "oohs" and "ahs" for the first forward passes Torontonians had ever seen.

When Warren Stevens was appointed U of T's Athletic Director in 1932, *The Varsity* had this to say:

"He is a man of fine moral character and pleasing personality. Stevens was the most sensational rugby player in the Dominion of Canada last fall, and his work with the M.A.A.A. will long be remembered. His modesty and sportsmanlike qualities have already won for him the admiration of Canadian sport-loving people."

Steve isn't awed by the fact that he was the first to have done this and the first to have done that: "There were a lot of fellows in the States who could have done just what I did, but I was approached to come to Canada first. It's as simple as that."

THE PLAY'S THE THING (I)

Around the World in 5 Nights

Photography by Bob Lansdale ——— Text by Lawrence F. Jones

Asish Sen, graduate student from India, was the prime mover in organizing the first International Drama Festival at the University of Toronto. During the Festival, five plays, representative of five different cultures — Indian, Japanese, Nigerian, Polish and North American — were presented on five successive nights.

Asish Sen explained why he and a group of devoted overseas and Canadian fellow students, supported by the International Student Centre, arranged the Festival: "One of the best ways to understand another man's way of life and thought is through the plays he writes or goes to see."

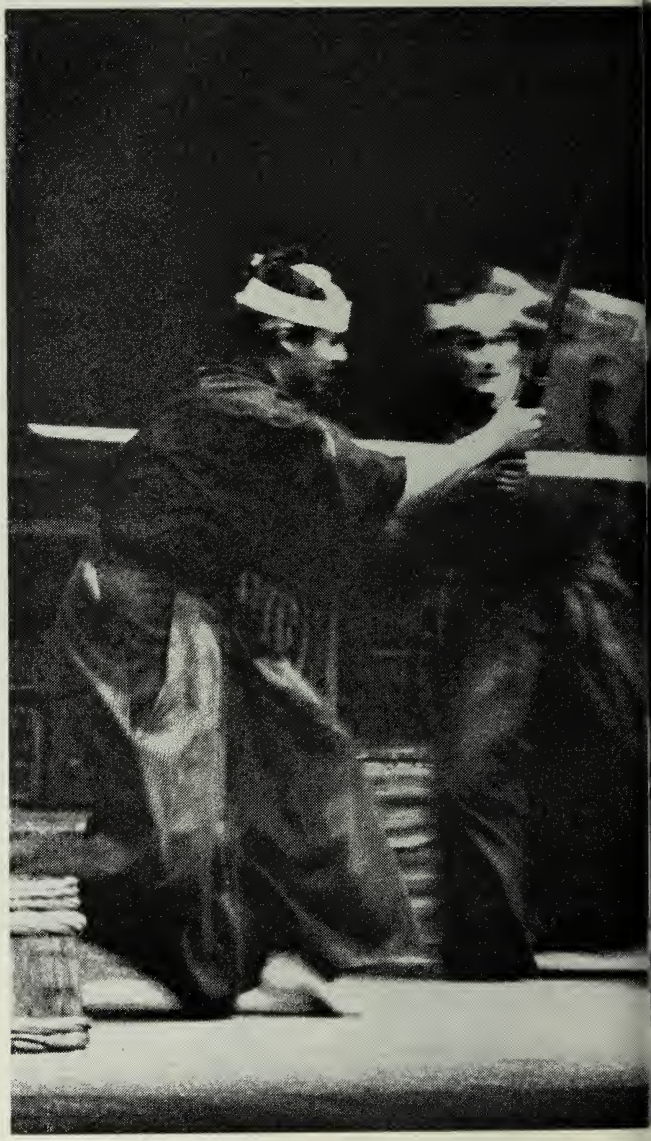
Her fingers crossed for luck, the young lady, *above*, watched the curtain go up for the Festival illustrated on the next 10 pages.

Above: A scene from a satire on political systems, *At Sea*, by the young Polish dramatist Slawomir Mrozek.

The other Festival plays were *The Lion and the Jewel*, by a young Nigerian playwright Welo Soyinka; *The Post Office*, by the Indian Nobel Prize winner Rabindranath Tagore; *Lice*, a satire on Japanese Samurai by Akutagawa Ryunsuke, and Eugene O'Neill's *Abortion*. For lack of qualified performers, not all of the plays, which were given in English, could be presented by actors of the race involved in the drama. For example, the cast in the Japanese play was entirely Occidental. This, however, was typical of the co-operative spirit that permeated the Festival. Ontario College of Art students helped with scenery and makeup, and members of the Student Christian Movement and the Graduate Students' Union worked behind the scenes.

Below: The all-male cast of *At Sea* takes a bow. The author of the drama is popular throughout Poland for his witty satires on the political movements of his time, including that of his own country. As can be seen, the setting was simple.

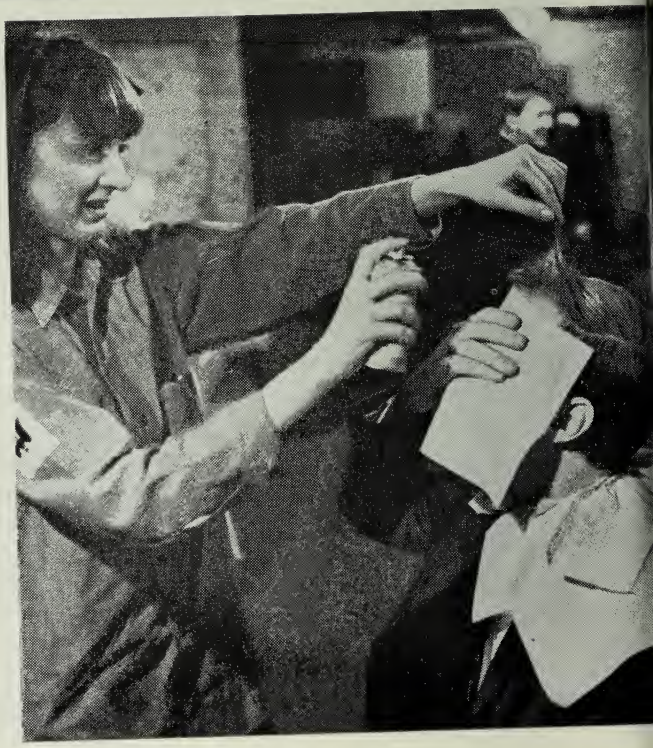
Above: As two plays were presented each evening, the subterranean backstage quarters of Hart House Theatre hummed with activity. In the picture, one of the Samurai applies leg makeup while, in the background, Indian actors get ready for their play.

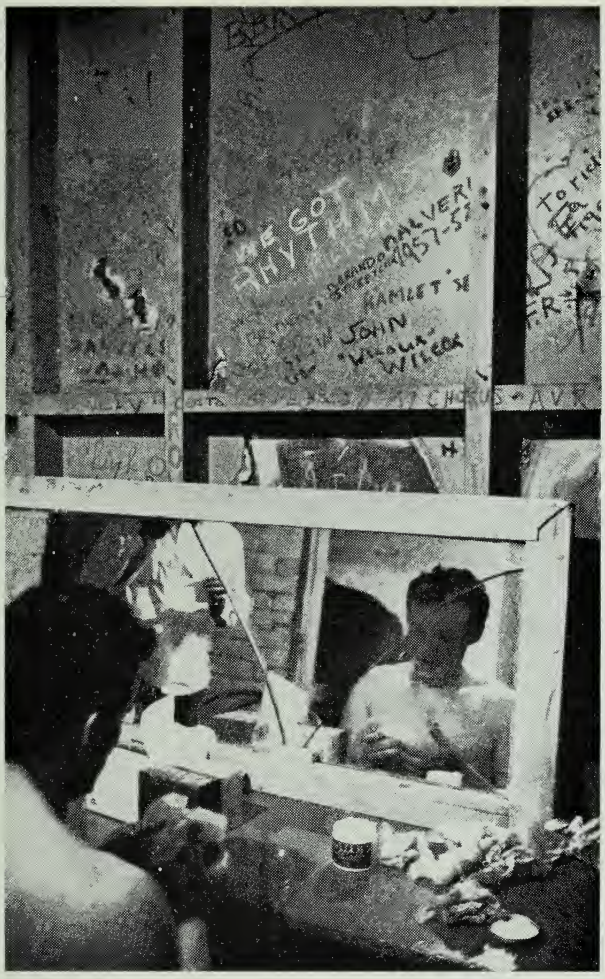


Diane Winegarden, *far left, opposite page,* is all wrapped up in the play she is watching from the wings. *Below*: The action of this exciting sword fight by the Samurai became so realistic that one of the combatants, David Hunt, suffered a cut on his right arm.

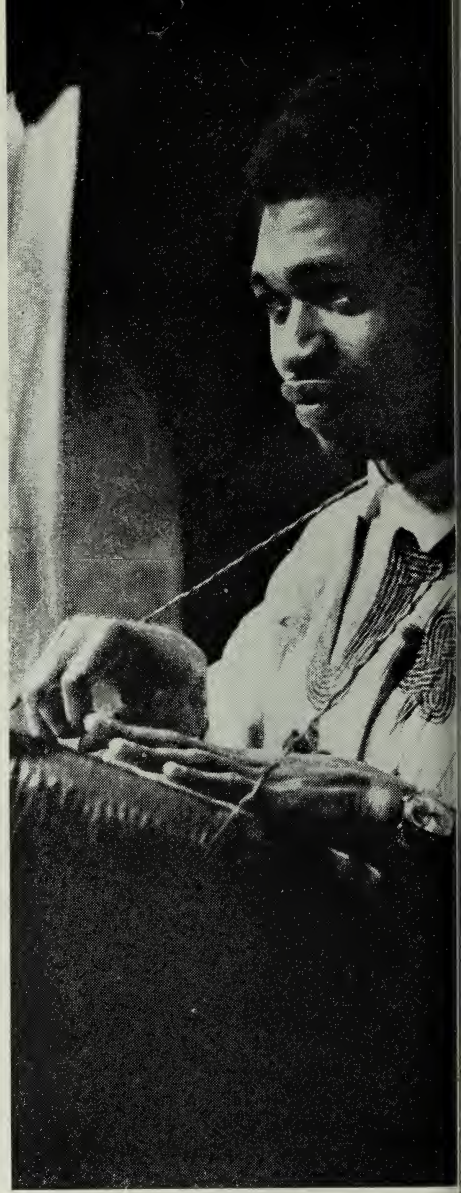
Left: The show must go on, even if one is suffering for one's art. David Hunt, his arm cut in the Samurai sword fight, receives first aid.

Below: Gail Fitzgerald "ages" Barry Dyster for his role as the father in the O'Neill Play. *Right*: Gail holds a fragment of mirror so that Barry may see the effect.

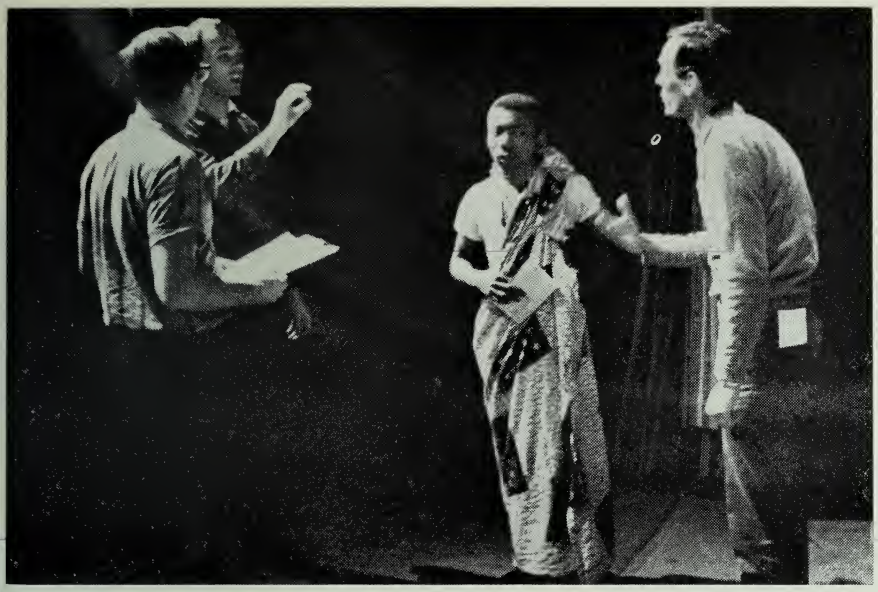




Above: Hart House Theatre dressing rooms are filled with memories of plays and players. Although the mirrors may be cracked, they have reflected through the years all the excitement and pleasures of theatre, whether it be Hamlet or U.C. Follies, or an International Drama Festival. To make sure of perpetuity, many performers have made a more or less permanent record on the walls.



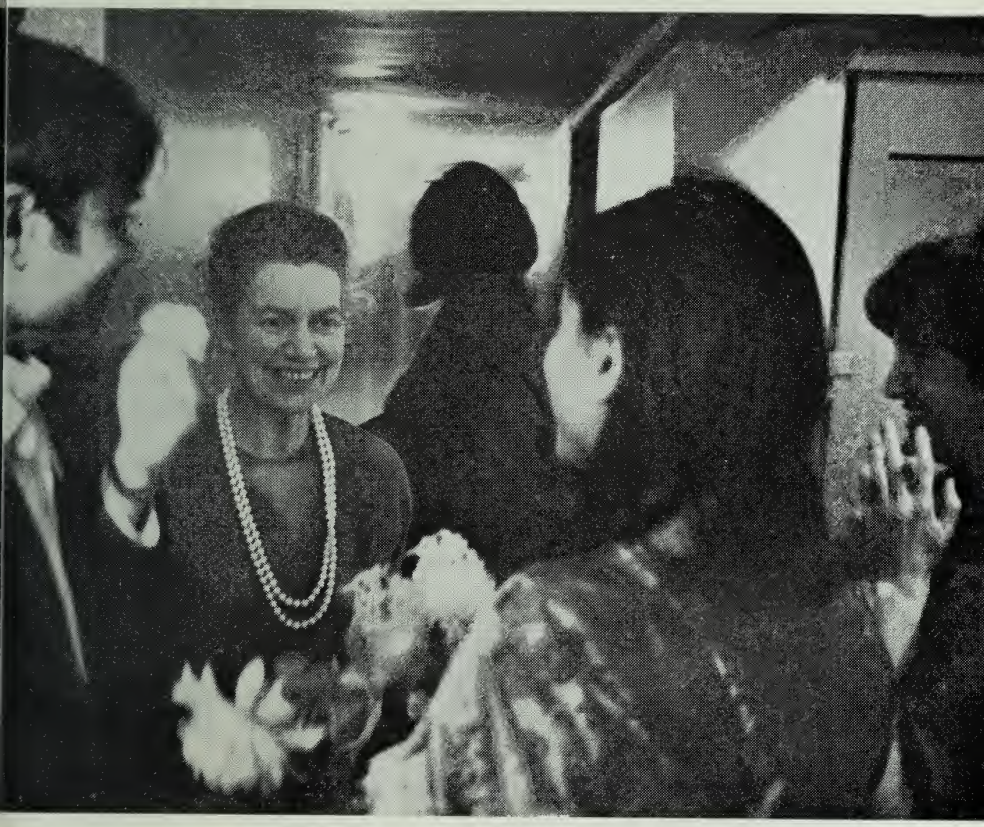
Left: The makeup artist is all-important before the curtain rises. *Above*: Beating the drum in *The Lion and the Jewel.*



At rehearsal, *above*, the director and his assistants argue a point that may improve the production on stage. While this is being settled, the actor around whom the discussion is centred waits patiently for the decision.

Still another country is heard from as the Festival goes on! This time it's the United States, represented by O'Neill's play, the scene for which is an American college campus. As in *At Sea*, the setting is austere.

Above: Lilac Ghose is an interested spectator as Nalini Goel helps Sandra Bell dress for her part. *Below*: Now a participant rather than a bystander, Lilac Ghose is on the stage in *The Post Office*.



Above: It's all over, and the curtain has rung down on International Drama Festival 1966. With Asish Sen, on the left, Mrs. Kay Riddell, Director, International Student Centre, goes back stage to congratulate the players (37 in the five plays), the directors, the executive, technical director Ken Goodman, and all the behind-the-scenes helpers.

A Kyght Pithy, Pleasaunt and Merie Comedie Intytuled:

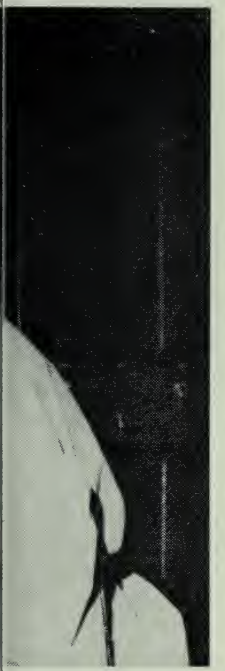
Gammer Gurtons

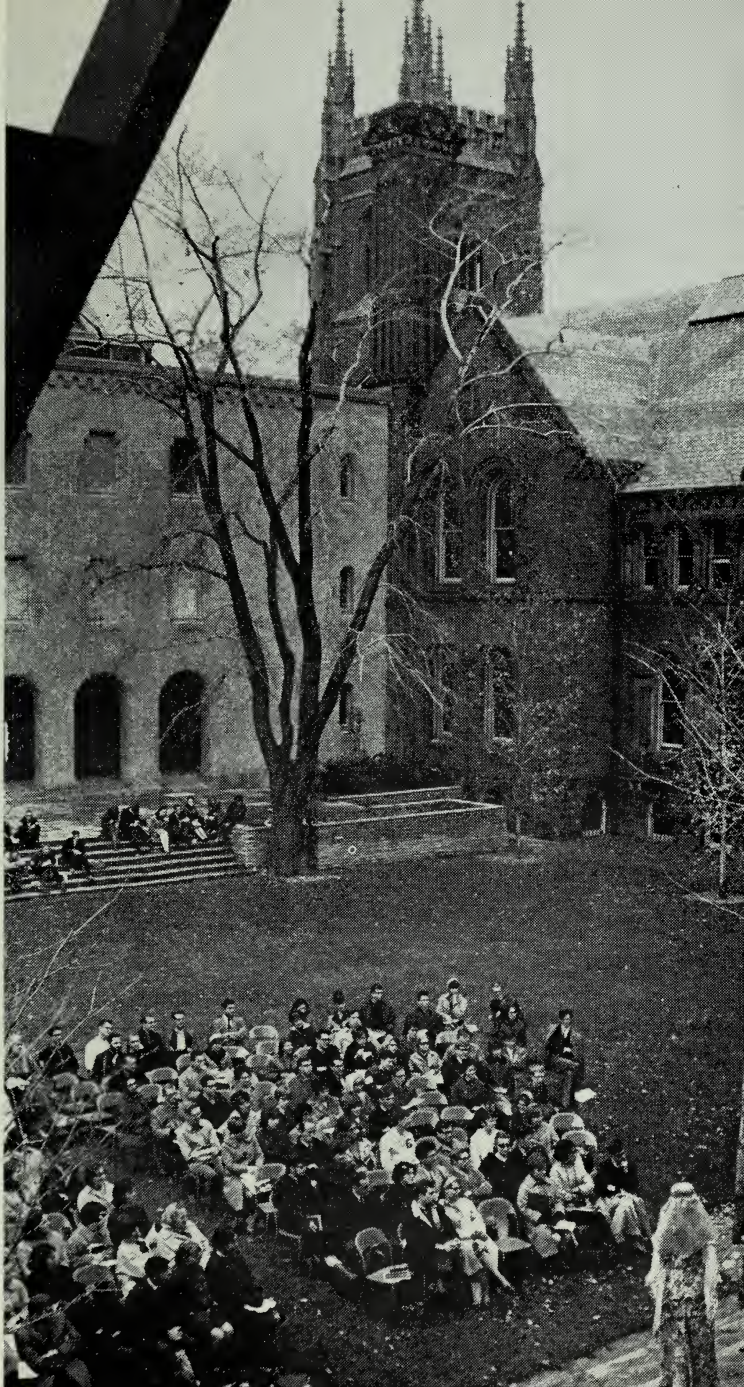
PRODUCTION OF EARLY PLAYS is a popular extracurricular activity of students enrolled in Varsity's Centre for Medieval Studies. *Above* we see Tyb (Paula Neuss, B.A. Oxon) and Cock (John Chamberlain, B.A. Haverford) comforting Gammer Gurton (Bonnie Rogers, Radcliffe) over the loss of her needle. A play on words in which the needle is an equivocation for sowing and sewing, "Gammer Gurton's Needle" was performed in the West Hall of University College in February. The director was Joel Kaplan, B.A. Pennsylvania.

Earlier the *Poculi Ludique Societas* (Fellowship of Cup and Play) staged the Wakefield "Second Play of the Shepherds", directed by Caroly Wightman, B.A. Toronto, and a Mummers' play in the medieval version of theatre in the round.

Facing page and overleaf: the University College quadrangle is the setting for a performance by the U.C. Players Guild of John Redford's "Wyt and Science". The director was Reiner Sauer, B.A. Toronto.

Vedle





Idleness (Janet Amos, University College) instructs Ignorance (Skip Shand, M.A. Cornell) in the U.C. Players Guild presentation of "Wyt and Science".

Crawford Grier
writes about Medieval Studies
and their new Centre

A Tough

Roberta M. Styran, B.A. New Brunswick, M.A. McMaster, who enrolled in Varsity's Graduate Centre for Medieval Studies in 1964, is doing research at the British Museum and the Public Records Office. The holder of a Province of Ontario graduate fellowship, Miss Styran was awarded a Canada Council grant to enable her to devote the whole of her Ph.D. year to preparing her thesis abroad. Her subject is the Parliament of 1406.

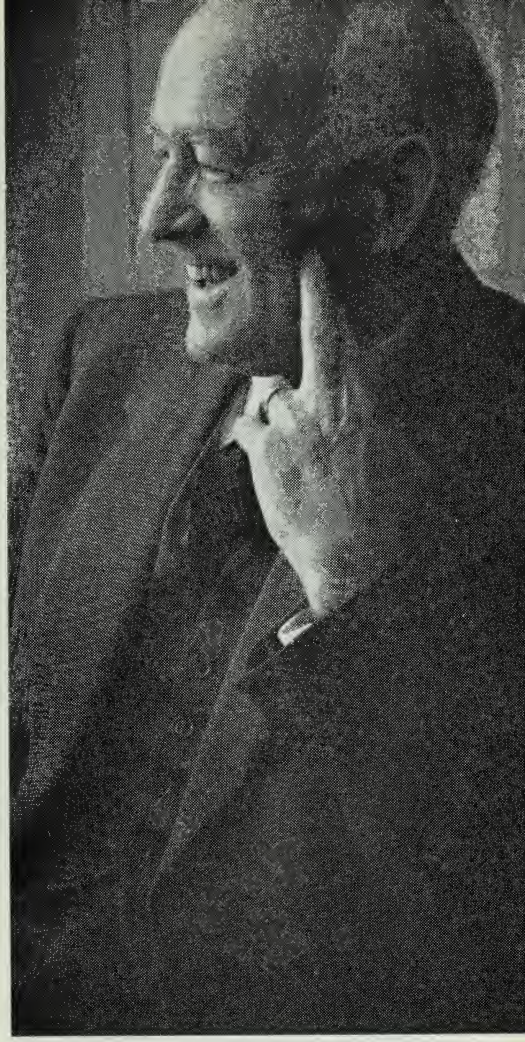
Edward Condren, B.A. Fordham, M.A. Cornell, was for seven years a jet pilot in the United States Navy. He holds a teaching fellowship in English at University College. Next year he will submit a Ph.D. thesis on medieval literary attitudes towards love. When Mrs. Luba Eleen, B.A. and M.A. Toronto, receives her Ph.D. a year from now, hers will be the first doctorate in Fine Art awarded by a Canadian university. Her thesis is "Studies in the Illumination of the Ingeborg Psalter". John O. Ward, B.A. Melbourne, M.A. Toronto, is a Commonwealth Fellow. His Ph.D. thesis will be a study of 13th-century

League . . .

commentaries on the *Ad Herennium* and Cicero's *De Inventione*. Condren, Mrs. Eleen, and Ward are, like Miss Styran, members of the Centre.

As adjuncts of the academic order of higher education, "Centres" are relatively new. They have only recently appeared among the more familiar organisms such as faculties and schools, and those primary elements, the departments, which they more closely resemble. Departments have a vertical structure. Centres, in contrast, have a horizontal structure; unhampered by traditional boundaries they enjoy an interdisciplinary and interdepartmental freedom of movement that enables them to penetrate and explore areas sometimes left in shadow by the older structure. In the past fifteen years 13 such centres have been formed at Toronto, some of them purely for research, others with a direct responsibility for the careers of students. Medieval Studies, established in 1963, is one of the latter. Its business is scholarship and its scope is vast. It is a tough league to be in.

Every age is an age of transition, not fully intelligible unless we regard



Professor Bertie Wilkinson, M.A., Ph.D., Fellow of the Royal Society, retires this year as the first director of the Centre for Medieval Studies.

Sister M. Raphael of Panama (Peggy Joseph, M.A. Notre Dame) is seen with Edward Condren.

it as a child of the past and a parent of the future. That is why the Middle Ages have become so important to the modern world — not as Gibbon's long night of ignorance and force, but as a period of comparative equilibrium when institutions were adapted to the needs of those who lived under them, and when the reconciliation of the real with the ideal brought relative stability.

The medieval mind was rational; it thought of the universe as the way it ought to be; if the data conflicted with the ideal, the data were often ignored. In contrast with our modern situation where man is an alien in a materialistic world, the medieval man thought of himself as the centre of a universe which could be controlled by reason. Among the institutions which this attitude of mind produced were common

law, on which rest social justice and ordinary legal justice; the parliamentary system of government on which our notion of political freedom rests; and finally the university itself.

By its own definition, the Centre for Medieval Studies is "a co-operative undertaking by all relevant University departments and the Pontifical Institute of Mediaeval Studies". The founder and first director of the Centre was Bertie Wilkinson, Professor of Medieval History and a scholar of international reputation for his studies of English constitutional history. On retirement, Professor Wilkinson has been succeeded by John Leyerle, Associate Professor of English. There are two secretaries — Humphrey Milnes, Professor of German, and Norman Zacour, Professor of History — and a committee of seven. A staff of 60 is drawn from 13 departments and the Pontifical Institute of Mediaeval Studies—founded at St. Michael's College in 1929 by a group of scholars headed by Etienne Gilson of the Sorbonne, the most distinguished living medieval philosopher. The immediate object of the Centre is the utilitarian one of training university teachers who will teach in the medieval period. Through the School of Graduate Studies, the Centre offers courses leading to the degrees of M.A., Phil.M., and Ph.D.

The courses from which a student may choose can be briefly summarized by a division into five main groups: (1) History (English, European, Slavic, and Islamic); (2) Language and Literature; (3) Art and Music; (4) Philosophy; and (5) Palaeography (the study of medieval writings and inscriptions) and Diplomatics (the science of deciphering and authenticating old manuscripts).

The courses in the first group are chiefly concerned with political, economic, and constitutional history; they are expected to be expanded to include technology and science. In Language and Literature, courses are available in Medieval Latin (a knowledge of which is essential for all students no matter what their field of interest), and the vernacular languages of Europe and the Near East. This selection will be amplified to include Celtic, Icelandic, Medieval Greek, and Medieval Hebrew. Courses in Art and Music cover the medieval period in

Professor John Leyerle has been appointed director of the Centre for Medieval Studies. His predecessor, Professor Bertie Wilkinson, retains a connection with the Centre as director of studies.

general; the Department of Fine Art specializes in the 12th and 13th centuries, and the Department of Music in the 12th through 15th centuries. Philosophy courses range from patristic writings to Ockham and Duns Scotus, with special emphasis on Thomas Aquinas. Those in Palaeography and Diplomatics include book hands from the 5th to 15th centuries, and preparation for text editing.

During the University year just ended there were 37 students in the Centre. About a third of them were from Canada, Britain, and Australia; two-thirds from the United States. Candidates are selected for their intellectual maturity, ability to do independent work, and focus of interest in the medieval period. Three Woodrow Wilson scholars and two Commonwealth Fellows received financial support from outside the University. Ontario residents are aided by provincial graduate scholarships; the Graduate School usually allocates a scholarship or two, and there has been strong support from departments of the University in the form of teaching fellowships. For the rest, financial aid is a serious problem, and falls short of what is needed to draw gifted students from outside the Province.

The pattern of instruction followed by the Medieval Centre intentionally emphasizes specialization and methodology of research; the student follows his research not to any preconceived goal but where the gleam beckons. The idea is to expose the student to conditions where he will encounter the intellectual excitement and satisfaction of discovery as he learns to investigate his material and think independently about it. Good teaching is not the repetition of accepted ideas, fixed critical attitudes, or authoritative pronouncements. Graduate teaching is at its best in the dialogue of the seminar where the stimulus comes from the fact that both teacher and pupil are involved in original research, where the former must consider problems he might otherwise have neglected, and where the latter is spurred on to become a teacher to himself.

EXPLORATIONS

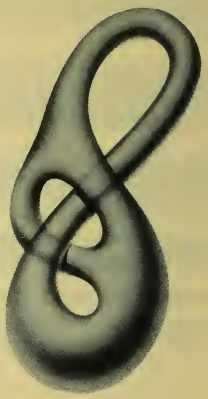
EXPLORATIONS

CONTENTS

Editor: MARSHALL MCLUHAN

Mathematics and the Language of Literary Criticism R. J. SCHOECK

MATHEMATICS AND THE LANGUAGE OF LITERARY CRITICISM



My aim is modest: I want only to be suggestive, perhaps outrageous and challenging, but at least suggestive, even at the risk of becoming exhortatory. I shall probably be raising as many questions as answers; but I assume a near-eclipse of mathematical light among my fellow-humanists, and among scientific colleagues something less than the total enlightenment of humanism: that we should discuss even the possibility of relations between mathematics and one of the humanistic disciplines seems to me to be very much worthwhile. As a starting-point, then, I would offer to fellow humanists this text from Hugh of St. Victor's twelfth-century *Didascalicon*: "mathematics never operates without the imagination."

Metaphors

Let me begin with the business of metaphors. The metaphors that we use to describe literary relationships, or change and continuity in literary history, are well worth periodic examination. The metaphor of the "house of literature"—with many rooms, among other features—no longer seems very satisfactory; but many will repeatedly speak of "charting" or "mapping" without full realization of the limitations of such a metaphor, or of the consequences in flattening, in making the features on such a literary map quite fixed. (Some time ago, in the *University of Toronto Quarterly* of January 1963, in speaking of the writing of intellectual history, I myself was guilty of this, and played with the further metaphor of drilling, and sampling, in order to compare two techniques of writing the history of Italian literary criticism.)

Obviously, we all feel the need for metaphors to enlarge or enrich the literal

statement, to extend the reach of concept, as does Sir Philip Sidney in his *Defence of Poetry*, wanting to reinforce the contrast of vice and virtue: "Now, as in Geometry the oblique must bee knowne as well as the right, and in Arithmeticke the odd as well as the even, so in the actions of our life who seeth not the filthiness of evil wanted a great foil to perceive the beauty of virtue." We all turn to metaphors in our writing as in everyday speech, and even the supremely romantic imagination of William Wordsworth was capable of operating at times in geometrical metaphors, albeit pejoratively, as in describing one aspect of his school-time in *The Prelude*:

> But who shall parcel out
> His intellect, by geometric rules,
> Split, like a province, into round and square?
> (II, 208–10)

There is great virtue in making use of the metaphors of the period itself, and M. H. Abrams' justly praised description of Romantic literary criticism is a conspicuously successful analysis of that criticism and use of a metaphor drawn from the period under study: *The Mirror* of neo-classical criticism is juxtaposed with *The Lamp* of romantic criticism, although a more obviously organic metaphor might be the growing plant. In "The King's Two Bodies" Ernst Kantorowicz found a unifying metaphor which enabled him to structure a vast and complex body of political, theological and juristic knowledge and tradition.

Still, sufficient attention has not been paid to the business of characteristic metaphors and to the consequences of employing them. In all of the writing on Plato and Aristotle—and I am here reflecting only on the question of their thoughts on literature and literary functions—very little seems to have been said about the buried mathematical metaphors in Plato in contra-distinction to the biological metaphors in Aristotle, although the recent *Bibliographie zur Antiken Bildersprache* (Heidelberg, 1964), which carries from the classical tradition down through Augustine to Isidore, should prove a most valuable tool. In that most famous of Aristotelian critical metaphors, *catharsis*, ought we not to see the very physiological metaphor of *purging* in something of Aristotle's post-Platonic light? Nothing could be more deliberately non-mathematical than that famous metaphor, for as Bywater has noted, *catharsis* very generally denotes physical clearance or discharge, and in the *Politics* there is a similar process in reference to certain emotions. In the tragic experience, therefore, the excitement is both necessary and good: "it serves as a sort of medicine, producing a *catharsis* to lighten and relieve the soul of the accumulated emotion within it; and as the relief is wanted, there is always a harmless pleasure attending the process of relief."

During the Middle Ages there was a great deal of biologizing in many areas:

thus, the soul is *nutritive*, *appetitive*, and so on. And (carrying on from Aristotle's *Politics*), the state is like an animate nature, or even an animal. The widely-read and long-influential ideas of Marsiglio of Padua on church and state often particularize in medical analogies. In short, there was much "biologizing of natural law concepts" (thus Morrall), and a drift or organic tendencies generally in the political thought of the period (thus Ewart Lewis).

Recent historical and literary scholarship has studied the light metaphors in medieval aesthetics pretty extensively, but there has not usually been very much relating of these metaphors to other characteristic metaphors of the period, or to habits of conceptualizing in and utilizing of metaphors. The Renaissance was especially fond of metaphors of light, and employed them most often to describe its own sensed relationship to the past: hence, the metaphors we have inherited of the "dark" ages, and of that period of Petrarch and his followers as a "rebirth", with its own new brightness. Petrarch was also fond of the river metaphor to describe his newly-heightened sense of continuity and tradition, and it may well be that this metaphor rather adequately handles Petrarch's sense—but I want to return later to the challenge of representing continuity. One final example of Renaissance metaphors was one which they inherited from their medieval masters, the mirror or speculum. But the medieval use of the speculum was, more often than not, to enable a man to see himself *sub specie aeternitatis*. The Renaissance man used the mirror to see himself as well as to hold the mirror up to nature. (Lewis Mumford has in fact argued for the effect of an increasing use of the glass (mirror) in the ego during the Renaissance: see *Technics of Civilization* (1934), 128 ff.)

It is one thing consciously to employ a living metaphor and to play with the overtones, or outward-reachings, of its operation; but when the metaphor dies, something else is likely to happen. Too often our thinking is patterned by dead metaphors without our being aware: as one example, the word *encyclopedia*, which originally was a living metaphor, *a circle of learning*—that is, a complete education—but we shall return to the circle later. It is well, then, from time to time to reflect upon the limitations of metaphors that we habitually employ, and for too long, I would suggest, literary people have been employing biologically oriented metaphors—organic theories of poetry, considerations of the poem as a plant, and all that—without sufficient awareness.

Of course, the metaphor is a powerful tool. (What wit first quipped that a man's reach should exceed his grasp, else what's a metaphor?) And Aristotle strongly asserts that to be a master of metaphor is the greatest poetic gift. Metaphor, he writes in Ch. xx of the *Poetics*, is formed on the basis of analogy, and is proportional.

But a man may cut himself on his own knife, Boethius and Chaucer remind us. And all tools need sharpening.

Mathematics as a source for metaphors

It was chiefly Cicero who was responsible for giving so strongly rhetorical a cast to Western culture; clearly, the Greek tradition had been heavily mathematical, and with the Greeks rhetoric and mathematics were never too widely separated—as the example of *hyperbole* and *hyperbola* would suggest (and likely the Greek rhetoricians would conceive of the rhetorical hyperbole as akin to the hyperbolic curve). The history of humanism, and consequently of the culture of Western Europe at least to World War I, can very nearly be written in terms of rhetoric.

All of this has changed, and in several ways. First, we seem to have passed through nearly half a century of rather violent anti-rhetoric, and now are witnessing renewed study in the sources and resources of the rhetorical tradition (notably in the work of McLuhan and Ong in contemporary English studies, earlier in the work of Croll, German philology and French stylistics). The study of rhetoric is more alive today than it has been for many decades. Rhetoric and literary criticism are both amenable to fresh possibilities.

And, perhaps more notably, we have generations of students coming into the universities who have had more mathematics than has been the case for humanities students for some time. It may be that they are capable of discovering affinities between literature and mathematics; it is certainly true that they seem to understand mathematical principles better than their immediate predecessors, who found that any possible relating had been left altogether to the curriculum and no attempt to achieve it was made for them in individual courses or lectures. And, at a time when the frontiers of literary criticism appear to have been stabilized, and some of the sages are looking for new tools and new techniques, mathematics is eminently worth consideration. Besides, the very inquiry may help to improve communications between the two cultures.

"Streams" and continuities

Let us take the problem of describing consecutiveness of literary events. The old "organic" scheme, still very much with us, is that of the river:

This is a rather primitive way of describing such relationships, and indeed it challenges the very notion of writing literary criticism. At point "A" on this

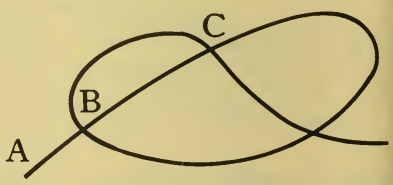
river, we found Homer writing his *Odyssey*: and at Point "B" Tennyson and his Ulysses; and at point "C", Joyce. (Perhaps in some minds there would be awareness of a double metaphorizing of rivers and time, but the recent essay of J. J. C. Smart on "The River of Time" in *Essays in Conceptual Analysis*, 1956, reveals how curiously inescapable such a metaphor may seem at the very moment that it is leading us astray.) Clearly, according to such a diagram, points A and B and C are separated, and the representation seems to imply that no direct connection between A and C is possible *because* something else (B) has come in between. Under examination, this conventional representation is most unsatisfactory.

Let us turn to modern topology for what I suggest is a more sophisticated metaphor.

(FIG. 2)

If "A" is the starting-point—in our case, Homer and the Ulysses theme (to use W. B. Stanford's phrase, from his most illuminating study)—then there is a kind of continuity which follows from that point, for a time. Until something bends the "line" and re-establishes a new relationship at point B (fig. 3), and another at point C (fig. 4): this metaphor, I am suggesting, more nearly dramatizes what does take place in the operation of literary relations (or in the behaviour of literary themes, if you like) than does the straight-line, or single line, of the stream metaphor.

(FIG. 3)



(FIG. 4)

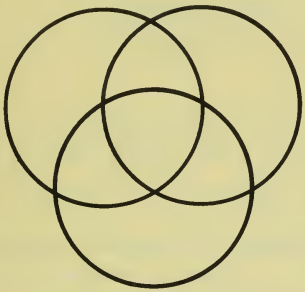
Clearly, it provides us with a more satisfactory diagramming of continuity and discontinuity. Further, is this not more nearly Eliot's concept in *Tradition and the Individual Talent*?

> . . . what happens when a new work of art is created is something that happens simultaneously to all the works of art which preceded it. The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them . . . . and so the relations, proportions, values of each work of art toward the whole are readjusted . . .

(Both for the literary critic and the literary historian, there is much food for reflection in Riemannian geometry, with its ability to describe variables in a flux, which is one way of beginning to account for a literary expression.)

The Three Rings

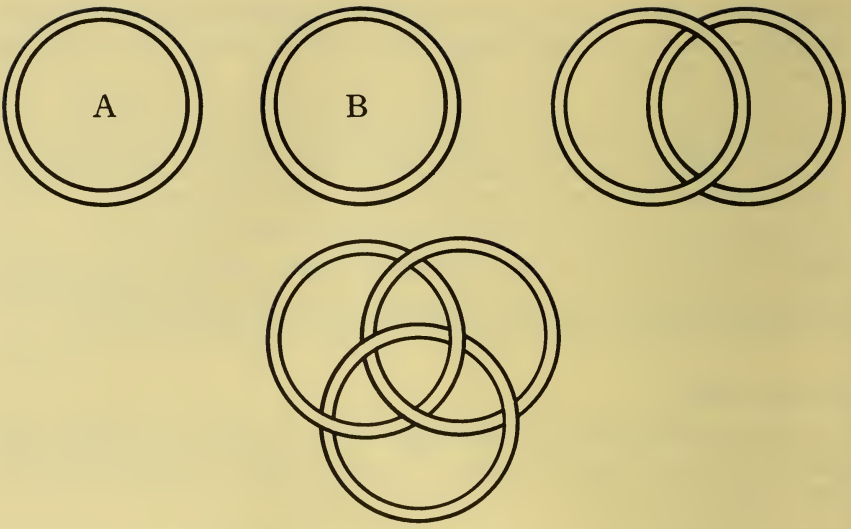
In teaching underclassmen for some years I have resorted to the three rings made famous by an American brand of beer to suggest the interrelatedness of author, work and audience.



(FIG. 5)

The figure conveniently suggests aspects of interrelatedness and emphasizes that there is a central area in which all three circles of influence or interest are involved.

Recently I have learned that this device earlier appeared in the coat of arms of the Borromeo, a famous Italian family of the Renaissance, and hence are sometimes known as the Borromean rings. A notable feature of this configuration of interlocked rings is that no two of the rings are linked:



(FIG. 6)

Circle A is laid on B
Then C on both

yet the group of three rings cannot be separated—it is as though any one of the rings serves the same function as the middle term of a syllogism. Thus it will be readily seen that if any single ring is broken and removed, the remaining two rings will not be connected.

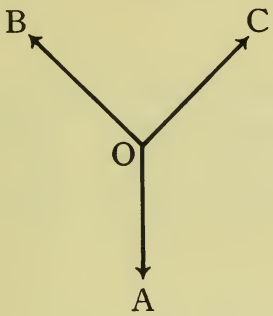
To suggest an analogy between the three rings and the three central concerns of literary criticism—author, work, and audience—is to analogize, to operate by using the diagram as a metaphor. And the use of a diagram as metaphor is itself an intriguing problem, one which seems increasingly to concern critics of Northrop Frye's schemata and critical structures. Most recently, J. Max Patrick has commented on this in reviewing Frye's clockface diagram of *Paradise Lost*, in *The Return of Eden* (University of Toronto, 1965), for the *Seventeenth-Century Newsletter* (Spring, 1966, pp. 1–2), with the judgment that the diagram has been imposed too rigorously upon the poem; a real and present danger, of which all critics should be aware.

Tension and polarity

For another example I would turn to another kind of problem, and to another area of mathematics. I have recently been concerned with a discussion of the

nature of the Renaissance and the Reformation, and specifically with an attempt to account for relationships of different forces at a given historical moment. In Tudor England, the pulls of humanism, of reformation, of scholasticism, and other movements and factors, are divergent, but not I think necessarily completely in opposition: for many religious forces—concerns of Scriptural study, of liturgical practice, of mysticism—are not always, certainly not easily, to be identified with just one of the above pulls, and Thomas More in his famous Letter to Oxford University gives a fine rendering of the tensions he observed about 1518.

Vector analysis, I would suggest, might help to account for such divergent pulls—metaphorically, not absolutely.



(FIG. 7)

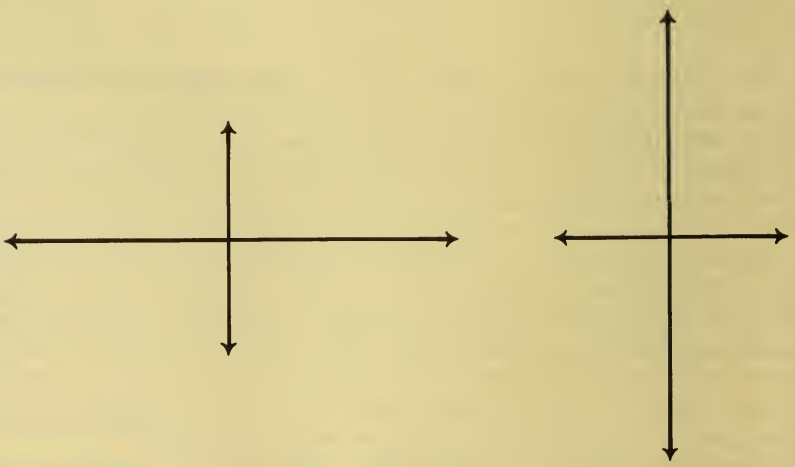
In terms of More's letter, OA might represent the scholastic, anti-Greek force; OB, the humanistic, pro-Greek force; and OC, that of reformation.

But I offer this simple diagram with awareness of the complexities of offering a diagram as itself a metaphor; and I am at least dimly aware of such studies in depth of polar tensions as that of Louis Norris (*Polarity*, 1956), which initiates discussion by pointing out that polarity is at the very core of Aristotelian physics (*Physics* 188a20), yet has enormous potential in contemporary philosophical discussion, provided that we are not attempting to establish a kind of calculus of polarity and do not involve a question of mathematical precision in such efforts. And I would urge that in place of an earlier opposition of two extremes on a linear spectrum, we have at play a principle of polar tension in which there are counter-balancings not so much of abstract oppositions but of co-principles working to produce an equilibrium.

A few years ago, in *New Scholasticism*, 1958, Wimsatt suggested a theory of poetic tension that diagrams something like this:

(FIG. 8)

where I and II suggest an axis of speaker (or generic) oriented and of audience (or effective) oriented criticism; and III and IV, an axis of didactic (whether moral or religious or Freudian) and of formal criticism. But I would comment that this diagramming is much too static for the system of poetic tensions that Wimsatt seems here to have in mind, and I would urge that a modified vector analysis would be more appropriate, with such alternate possibilities as:



(FIG. 9 and FIG. 10)

Objections

At about this point—if my humanistic confrères have stayed with me so long—I can hear mutterings, or more outspoken objections about failing to differentiate between the *quality* of a literary work and the *quantity* of a mathematical exercise. (How very medieval that distinction is! and I use the term first, historically, to indicate that the distinction was one which the middle ages perfected in assuming its heritage of Aristotelian and Boethian physics and metaphysics, and, secondly, with deliberate irony, pejoratively, to indicate that it is one of those medieval inheritances which we now think of as having only an historical importance.) Of course, humanities will be concerned to understand what Wolfgang Köhler has called "the place of value in a world of fact"; but there is a world of fact in the humanistic universe, and that there may be values in that of the sciences, we should be willing to grant.

Poetry and Numbers

In the domain of poetry, there is much to explore concerning numbers, beginning with Dante's account (in *De Vulgari Eloquentia*) of numbers in the structuring of a stanza or of *canzone*; but as Curtius makes clear,

> the wonderful harmony of Dante's numerical composition is the end and the acme of a long development. From the enneads of the *Vita nuova* Dante proceeded to the elaborate numerical structure of the *Commedia*; $1 + 33 + 33 + 33 = 100$ cantos conduct the reader through 3 realms, the last of which contains 10 heavens. Triads and decads intertwine into unity. Here number is no longer an outer framework, but a symbol of the cosmic *ordo*.

(Thus E. R. Curtius at page 509 of *European Literature and the Latin Middle Ages*, in which there is enough material on numerical composition to launch several theses.)

Towards the end of this development, there is Gerard Manley Hopkins' most interesting use of mathematical formulae in accounting for sonnet structure:

> Now it seems to me that this division is the real characteristic of the sonnet and what is not so marked off and moreover has not the octave again divided into quatrains is not to be called a sonnet at all. For in the cipher 14 is no mystery, and if one does not know or avail oneself of the opportunities which it affords it is a pedantic encumbrance and not an advantage. The equation of the best sonnet is
>
> $(4\ 4) + (3\ 3) = 2.4 \quad 2.3 = 2\ (4 + 3) = 2.7 = 14$
>
> (Correspondence with R. W. Dixon, p. 71)

Have we readers of the 1950's and 1960's yet caught up with Pound's very traditional sense of poetry as inspired mathematics? This traditional sense, in part, stems from the tradition we find in England of Spenser's "wise wordes

taught in numbers for to runne", of Congreve's "magic numbers", of Pope's "I lisp'd in numbers, for the numbers came", and still of Longfellow's plaintive "Tell me not, in mournful numbers"—but a tradition which has escaped its historian. It is a very old humanistic tradition, one which Plato would have understood immediately, and Augustine, whose *De Musica* richly marries music, mathematics and poetry. The idea of inspiration leads us to the arithmetical rationalization of the Father with other members of the Trinity (as in Thierry of Chartres), and related though separable discussions of the soul and mathematics—perhaps best summarized by Macrobius' in *Somnium Scipionis*, ". . . the soul is a number moving itself"—which have been dealt with by Jerome Taylor in his edition of Hugh of St. Victor's *Didascalicon*.

Scott Buchanan's brilliantly suggestive, though somewhat sketchy, essay on *Poetry and Mathematics* was long out of print but it has now re-appeared in paperback; and we all have much to learn from his discussion of correspondences between words in poetry and numbers and figures in mathematics—between counting in arithmetic and recounting in literary narrative, between figure transformations in geometry and character development in the novel.

Have I failed to make clear that I have been employing diagrams as metaphors? I would not want them to be taken any farther. And here I might well indicate other self-imposed limitations. I have not ventured into the domain of mathematics and computer-language, and have done nothing with statistics: both computer-language and statistics have been related to literary criticism recently, and we shall no doubt be hearing much more of efforts of this kind: see "The Computer and the Humanist" and "This Wonderful Machine": "Some Thoughts on Computers and the Humanities" in *ACLS Newsletter*, xvii (Spring, 1966). Nor have I tried to say anything about logic as another bridge between humanistic discourse and that of the mathematician: both in symbolic logic and in the grammar of mathematical symbols there is much which we can

contribute to and much from which we can learn about the theories and operations of signs and symbols. And I have steered clear of what was recently called the dangerous business of introducing mathematical certainty into textual criticism: "the light of *Principia Mathematica*, as reflected by The Calculus of Variants, can be a *ignis fatuus*" (thus TLS, 24 March 1966)—but something of this is covered in our forthcoming Toronto volume on *Editing Sixteenth-Century Texts*.

Mathematics and the fine arts

In discussing mathematics and poetry, I have said little about mathematics and the other arts, although proportion obviously leads us to painting and numbers to music. While the connections between mathematics and music were well-known to the Greeks and continued to be viable for Boethius, Augustine, and the Middle Ages, the connections between mathematics and painting are less well-known, or at least less obvious. In the fifteenth century, Morris Kline has summarized: "The artists finally realized that the problem of perspective must be studied scientifically and that geometry was the key to the problem" (*Mathematics in Western Culture*, Oxford Galaxy, 1964, p. 132). The man who turned the key was Piero della Francesca, one of the best mathematicians of the century and the great master of perspective, whose *De Prospettiva Pingendi* closely related painting and perspective; indeed, later he tried to show that "the visible world could be reduced to mathematical order by the principles of perspective and solid geometry". While the most famous of artists to contribute to the science of perspective was Leonardo da Vinci, the most influential was Albrecht Dürer, whose widely influential treatise, *Underweysung der Messung mit dem Zyrkel und Rychtscheyd* (1528) argued that the perspective basis of a picture had to be constructed according to mathematical principles. Later names of prominence are Masaccio, Uccello, and Francesca.

In a forthcoming book, Professor Marshall McLuhan will discuss the entry of perspective into Renaissance poetry, and the pioneering character of Shakespeare's *King Lear* and the great achievement of Milton in this consideration will be a part of his argument. Concepts of light and shadow (for characters as for landscape), as well as distancing and background, are all involved in perspective.

In architecture, as a final note, Otto von Simson has argued for the vital role of the Pythagorean golden mean in the design of the Gothic Cathedral, but of course the Pythagorean theory of the "harmony of the spheres" reaches out to colour much medieval and renaissance poetry as well.

Meta-metamorphoric possibilities

In addition to the matter of metaphor, may I intimate other possibilities that an increasing exploration of mathematics and the language of literary criticism promises:

(1) Mathematics is likely to lead to a greater concern with classification, to the particular form of a given work—to taxonomy, which will likely be related both to the Chicago structural analysis and to the Spitzer concern for "the exact understanding of the individual linguistic form" (as Auerbach has phrased it).

(2) We have much to learn from deeper and more careful explorations of logic:

a. the logic of proof: in arguments and discussions, we have need to make more precise distinctions between suggestions and demonstrations and proof—I suggest that most graduate students need to be schooled on the hierarchy of notions and concepts, of supposition, of hypotheses and theories, and of laws.

b. the logic of movement: and here the play of vector analysis has been strongly urged above.

c. the logic of relationships: topology may well be one of our most important tools to develop a sharpening sense of influence, for source-studies and for genre studies.

We should then be more nearly ready for an Ong metaphor of the asymptote (cf. Wimsatt, *Short History of Literary Criticism*, p. 551), or, a little farther afield, a Blackmurian adduction of the 2d law of Thermodynamics in discussing the dynamics of the novel.

Edna St. Vincent Millay's sonnet *Euclid Alone Has Looked on Beauty Bare* is well-known for its description of Euclid himself, but the poem is largely

descriptive and looks at mathematics from the outside. I would suggest that William Empson's employments of mathematical concepts are, like his handling of legal concepts, most imaginative, and a detailed comparison of his poems employing mathematical concepts with the Millay sonnet would demonstrate the difference between two levels of imagination. I have in mind such lines as these from Empston's "Dissatisfaction with Metaphysics":

> How smooth his epicycles round him run . . .
> New safe straight lines are finite though unbounded,
> Old epicycles numberless in vain. . . .

and from "Letter I":

> Too non-Euclidean predicament. . . .

or the explanatory note for "Letter V", which indicates the rich play of concepts of locus, points, and tangents in Empson's poems, and speaks indeed of the effect of being in non-Euclidean space. If Euclid's is a tactile world (as Kline, for one, has suggested), we can understand why the Gutenberg man should have clung to his Euclidean geometry so long; but in the post-Newtonian world of Riemannian and Lobachevskian geometry and logic, the tactile has been displaced: this newer world, long familiar to mathematicians and philosophers, is one which the literary critic and poetry must learn to live in—or, as Empson puts it, "*Your curve* (in 'Letter V') is the curve of the mirror which makes it reflect a wide area, like a camera obscura, but gives the reflection an odd geometry as in non-Euclidean space, so that you can't imagine yourself inside it". But we must try.

Conclusion

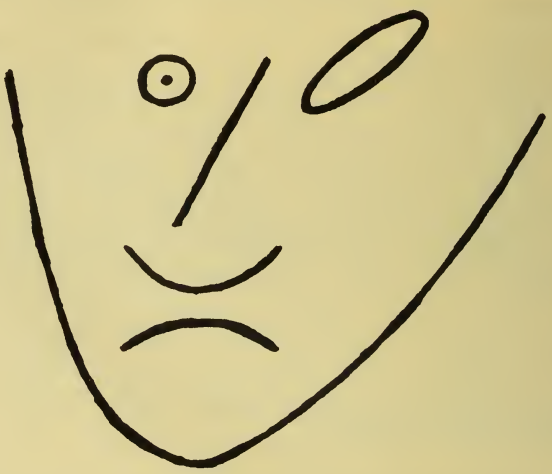
I am not worried whether I may have betrayed some primitive, or erroneous, notions of mathematics: I have not yet checked out anything of what I have said with any of my mathematical friends. There may well be the generation of a certain degree of good-natured sympathy on their part towards a humanist for at least trying to speak their language—like that of a Parisian waiter towards an Anglo-Saxon Canadian student, or even that of a New York policeman stopping a Cornell professor driving the wrong way on a one-way street and dismissing him good-humouredly with a, "Well, go your way and do the best you can." Even though that is not alien to my main purpose, I have been aiming at something else.

My concern has been, first, to challenge you to think about the metaphors used in traditional literary criticism and to consider the extent to which these metaphors have conditioned our thinking; secondly, to urge an awareness of mathematics as a possible source for fresh, and more fruitful metaphors. If

these things have been done with any degree of success, then perhaps we may explore more fully the deeper problems of the language of literary criticism and, at the same time, strengthen a bridge between mathematics and the scientific world, and criticism and the humanistic world.

R. J. SCHOECK, *St. Michael's College*

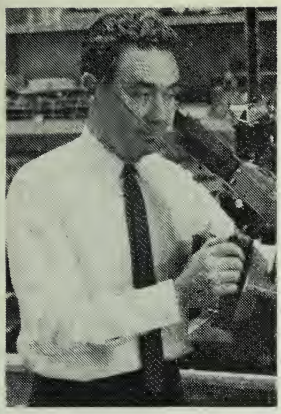
CONIC SECTIONS . . . IN GEOMETRY AND LITERATURE



Although it has been said that the cultures of the humanist and of the technologist are far apart, we may note that at least the geometrician and the literary writer speak the same language. The names of the geometric figures (*conic* sections) arising from the intersection of a *plane* with a double cone aptly describe the various styles of writing. There are, for example, the *plain* talk of Sinclair Lewis, the simple *line* of Alexander Pope, and Bertrand Russell's arguments which head straight to the *point*. The "Divine Comedy" is a *parabolic* narrative on many *planes*. James Joyce makes frequent use of *ellipsis*, Candide's thoughts at times wander in *a circle*, and Shakespeare draws upon the *hyperbole*.

—P. W. Cooper

Jerome Ashmore, "Technology and the Humanities", in *Main Currents in Modern Thought*, 22: 3, Jan.-Feb., 1966, p. 68.



DR. BALDWIN

The Case of the Radio-Sensitive Cockroach

LEONARD BERTIN

IF THE HORRORS of nuclear war should ever again be let loose on the world, a giant South American cockroach could suddenly become the poor man's Geiger counter, in a role akin to that of the miner's traditional canary. The eyes of these insects can apparently "see" atomic radiation, even at levels too low to show up on many electronic detectors.

The man who made this unexpected discovery recently is University of Toronto science alumnus Dr. William Baldwin, one of some 30 Varsity graduates currently on the staff of the atomic energy research establishment at Chalk River, Ontario.

Taking advantage of the special techniques available to him at Chalk River, he began to use radioactive "labels" to trace the movements of a number of agricultural pests, and to do research on long-term genetic and short-term radiation damage. Then, at the request of the Venezuelan government, he turned his hand to a medical problem—that of controlling Rhodnius prolixus, the insect vector responsible for spreading Chagas disease, a form of sleeping sickness prevalent in South America.

The giant cockroaches were a souvenir of one of his journeys down South and offered a useful laboratory tool in experiments to determine the relative genetic importance of chronic and acute doses of radiation. At the time he made his accidental discovery, one of the monster roaches, well over two inches long, was positioned under an X-ray machine, ready to receive a carefully-measured dosage of radiation.

Dr. Baldwin points out that there have been a number of isolated reports appearing from time to time that have suggested various forms of life, including rats, frogs, and some insects, could sense radiation in some way. In a few cases, variations in electric potentials were apparently

EDITH! DON'T LOOK NOW, DEAR, BUT DO YOU NOTICE ANYTHING FUNNY ABOUT MY EYES?

associated with the exposure. In the case of the cockroach, however, no one expected the insect to act in any unusual way. But, when the moment came and the beam was switched on, it immediately started waving its antennae wildly and tried to escape.

"This made us very curious," Baldwin said, "and we started a series of tests to discover the source of the sensitivity. In the course of these investigations, we found that the eyes of the roach were responsible. We then succeeded in introducing tiny electrodes into the eyes of the insect were able to detect measurable electric currents each time the X-ray machine was switched on. We found the retina so sensitive, in fact, that it reacted to dose levels of radiation that were at the limits of our delicate measuring instruments."

Baldwin's work, fascinating as it is, represents only a small facet of the activities of the 2,500 men and women now employed at the Chalk River establishment. And so far as graduate members of staff are concerned, programmes generally demonstrate the same breadth and scope and interest in both applied and fundamental research. The reason may not be too hard to find.

Very few of the present team remember the site as it was in 1944, when it was first reconnoitred by scientists — a primitive settlement called Indian Point, on the south bank of the Ottawa River, 130 miles west of the nation's capital. Very few remember the days when the entire staff of the establishment were able to travel to work from their prefab bungalow, the "Ipswich Arms", in a single station wagon. Yet the same frontier spirit that led the small group to pursue its work under those early primitive conditions has somehow permeated the larger team. And now when the Chalk River people are not busy installing a new atom smasher, they usually find time to build docks for their yacht club or to drive roads through the bush to a new ski run.

In the 12 years the establishment has been in operation, the vast quantity of water that has flowed by "The Point" may not have noticeably swelled the oceans but the fund of human knowledge has been markedly enriched by the steady flow of scientific and engineering data from there during the same period. Varsity alumni, it is heartening to note, have played a key role in this work.

One of the early starters was David A. Keys, who, as a sickly boy with sight in only one eye, had joined Sir John McLennan's honours physics class of three in 1910 after attending a course of lectures by Röntgen in Vienna. Dr. Keys later accompanied McLennan to Europe to work for the British admiralty on wartime anti-submarine measures. When the First World War ended, he worked for periods in Cambridge with J. J. Thompson, discoverer of the electron, and Lord Rutherford, the "father of atomic energy", before returning to Canada to study first at Harvard and then to teach at McGill.

It was in the fall of 1946, after yet another world conflagration, that Dr.

C. J. Mackenzie, president of the National Research Council, called in Keys one day and asked him enigmatically: "How would you like to go up to Chalk River?" Keys, misunderstanding the intent but always a willing horse, replied that "I don't think I can make it this week. I'm too busy." Mackenzie then explained that he wasn't talking about any short visit. He meant him to become project manager of the establishment, which was then a branch of the Council, with the additional title of vice-president of N.R.C.!

In the eight years that followed, the residential area, known as Deep River, was virtually a company town and Dr. Keys, the benign scientist, soon became what an associate described as "a sort of combined city mayor, head of a working gang and father confessor, all rolled into one."

At first, John (subsequently Sir John) Cockcroft and later Dr. W. Bennett Lewis, both brought over from Britain, looked after the research side. R. F. Wright, another U of T alumnus, assumed responsibility first for operation of the great research reactors N.R.X. and N.R.U. But Wright, who after gaining his degree in electrical engineering at Varsity during the depression days, had demonstrated his spunk by working for years as a gold miner, soon showed himself to be a jack-of-all-trades. In 1947 he was appointed general superintendent of services and in 1954 became manager of engineering and services. Since then he has held various titles but all of them add up to the fact that he is responsible for running the two great research reactors, the chemical extraction plant, the "loops" for testing materials and machinery under working reactor conditions and all the plant services. In his capacity as General Manager, Works, he reports directly to the president of AECL, J. Lorne Gray.

From the early days, Wright's role was a key one. When the war ended, it will be recalled, Canada under the terms of the then still-secret Quebec Agreement found itself one of only three countries known to have a substantial amount of engineering "know how" in the nuclear field. Wright's early "baby", the NRX reactor soon insured for Canada a continuing important place in the international nuclear picture by providing for several years the most powerful nuclear research tool in the world.

Possessing as it did unrivalled facilities for irradiating materials and apparatus in a most intensive fashion, it played a vital part not only in Canada's own program but also in those of the U.S. and Britain. Chalk River quickly became one of the world's principal sources of radioactive material for peaceful purposes and the only sizeable source of radioactive cobalt 60 that was to prove so important in the treatment of cancer. When the far more powerful NRU research reactor began to operate, Canada surpassed even the U.S. in the manufacture and export of radioisotopes.

The handling, processing and packaging of these tricky materials, needed in many different forms by scientists,

medical men and engineers, was a field of expertise in itself. The task was given to Roy Errington, another U of T alumnus. Under his guidance and aggressive sales leadership the work expanded to the point where Errington, now a vice-president of AECL, does business with more than 60 countries.

Errington had graduated from U of T as a physicist and gone into oil prospecting. When war broke out he found himself inspecting radar equipment. When it all ended, Errington started looking for a peacetime job and eventually answered a want ad for a technical salesman. The would-be employer was the Crown company, Eldorado Mining and Refining, the suggested abode Ottawa and the product he had to sell was, of all things, a large unwanted inventory of radium, a by-product of the uranium industry.

Errington buckled down to the new task and succeeded so well that he realized he would soon be out of a job if he didn't find something else to sell. This predicament caused him to switch his interest to cobalt-60, a man-made radioactive isotope that offered to provide an even better alternative than radium.

At that time, because of its unavailability, cobalt-60 had not been used for medical purposes but Professor W. V. Mayneord in Britain had pointed out how useful it could be. The trick was to design a machine that could handle safely this material that was potentially many times more dangerous than radium.

Of the first two consignments of cobalt-60 produced at Chalk River, one went to the NRC and, later, to the Ontario Cancer Foundation's unit in London, Ontario. The other was sent to U of T science alumnus, Dr. H. E. Johns, then professor of physics in the University of Saskatchewan and physicist of the Saskatchewan Cancer Commission. The data that the two groups collected in the ensuing months is still the basis for most work in that field and the unit designed then by Professor Johns provided the basis for more than a thousand units that have since been marketed by Errington's Commercial Products Division of AECL.

During all the history of atomic operations in Canada, the health of the staff, of the people in the surrounding areas and of all those people in the population at large exposed to atomic processes has been a priority consideration. The field is still a comparatively new one and one of the most important tasks has been that of research, leading to information on which sound rules can be based. It's an area that U of T graduates, both medical and scientific, have always played a prominent part. Radiation Research and Safety were formerly under the direction of Dr. B. C. Butler and are now the responsibility of Dr. A. M. Marks, both University of Toronto graduates. Medical activities are directed by another Varsity alumnus, Dr. C. G. Butler.

Radiation can also cause profound damage to materials, of course and here one of our chemistry graduates,

Dr. J. A. P. Davies, has shown considerable initiative. Problems can arise from several factors concerned with the fission process. When, for example, an atom of uranium 235 splits into its two more or less equal fragments, known as "fission products", it also expels two or three neutrons which provide the "lifeblood" of the continuing chain reaction. At the time they are expelled, they carry enormous energies, of the order of several million electron volts and the situation can be likened to that of a rifle, which recoils violently as a bullet leaves the barrel. The two fission products, each sizeable atoms in the medium weight range, are brought to rest by repeated collisions with atoms of the fuel or structural materials around them. But, even in the one-thousandths part of a microsecond that it takes for this to happen, they may rip their way through several thousand atomic layers of solid material.

For those doing research in this area, one of the major problems was that of locating each displaced atom in a test situation and Dr. Davies here had a brain wave. The dimensions involved are far too small to use a microtome, the microscopist's version of a mechanical bacon slicer, so he turned to an electro-chemical technique based on his earlier post-graduate work at U of T. First, the surface of the metal was polished and then it was allowed to "oxidize", or rust.

By using the right conditions, Davies was able to ensure that only one or two layers of atoms rusted at a time. These layers he would then dissolve with an appropriate reagent, to expose a new atomic layer of the material for inspection, until, eventually, he would come across the buried fragment.

Thanks to the work of people like Dr. Davies, it has been possible to make many improvements to the original nuclear concepts that were used in reactors like NRX and NRU.

Some problems, like those tackled by Davies, require painstaking laboratory work with extremely delicate and sophisticated research tools. Others can more easily be solved with a pencil and scratch pad by men like Dr. Lee Whiting, who came to U of T in 1944 from the village of Iroquois Falls, near Timmins. A cross between an applied mathematician and a theoretical physicist, Whiting is interested in esoteric things like nuclear shells, beta ray spectometers and the focussing of beams of nuclear particles. One of his current interests is in an idea, under development in Chalk River, called "ING", or the Intense Neutron Generator, which offers to provide a short cut to the production of nuclear energy and alternative forms of fuel.

One of the subjects of greatest interest at present, however, both in Ottawa and also at the new research and development establishments that have been set up in Whiteshell, Man., and in Toronto, is that of finding more efficient ways to transfer heat from power reactors.

The fact that the U of T is still pulling its weight in the field was well demonstrated recently when a count of the 132 employed graduates

in the Toronto establishment of AECL revealed that no fewer than 46 of them were Varsity alumni! Whilst all of these are concerned with completion of the Douglas Point plant and the design of a new and monster atomic power station at Pickering, just 16 miles from Toronto, another group, also in Toronto, is looking further ahead. In particular, they are searching for more efficient ways to remove heat produced in the reactor fuel by the nuclear chain reaction, and use it to make steam.

All the current Canadian projects employ heavy water, under pressure, for this purpose because of the excellent nuclear properties of heavy water. But a team working under U of T alumnus Dr. George Pon has shown that, even using unenriched natural uranium as fuel, it is possible to design a reactor in such a way that ordinary light water can be used for the purpose. The concept that Dr. Pon and his group are working on is known as CANDU-BLW, for Canadian Deuterium Reactor – Boiling Light Water, and it is no exaggeration to say that it promises to achieve what nuclear engineers anywhere in the world would three years ago have said was impossible. The confidence that AECL places in the concept is well demonstrated by the fact that it has been recommended as the basis for the first experimental nuclear power station to be built in the Province of Quebec.

If the Varsity has played an important part in the development of atomic energy in Canada to date, the auguries are that its role in the future will be felt even more. Under Professor Douglas Andrews, of the Department of Chemical Engineering of the Faculty of Applied Science and Engineering, the University of Toronto now offers regular courses in nuclear technology.

Anybody with an appropriate degree qualification from a recognized university can take a graduate course in nuclear engineering, points out Prof. Andrews, and the new Master of Engineering degree, granted by U of T, is particularly suitable for the civil, mechanical or electrical engineer who wishes to acquire nuclear competence. There are also part-time opportunities for study. Engineers doing full-time work with the Hydro-electric Commission of Ontario and with the Power Projects group of Atomic Energy of Canada come in for day courses. Evening courses have also been offered in conjunction with the Canadian Nuclear Association.

The link between Varsity and Atomic Energy of Canada was strengthened in a potentially very meaningful way recently when, for the first time, arrangements were made for a U of T graduate student, Paul E. Tremblay from Quebec, to carry out part of his doctoral research at Chalk River under U of T supervision.

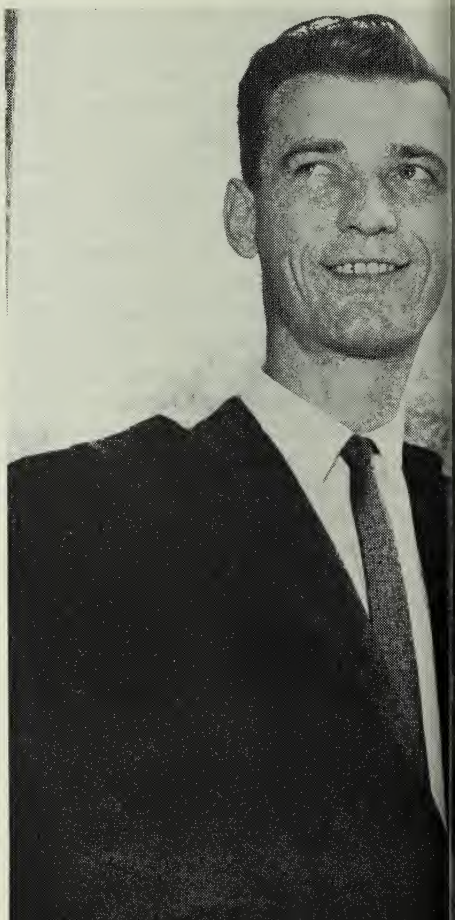
On the scientific side, there is no doubt that the recent installation of a powerful linear accelerator – an atom-smasher in lay parlance – will add considerable interest to the variety of instruction that is already available to would-be students.

Varsity's first Masters

H. C. Eastman

The School of Graduate Studies of the University of Toronto first enrolled candidates for a new degree, the Master of Philosophy, in 1964–65. In that year 29 candidates were enrolled of whom the great majority were in language departments. In the second year there were 40 candidates of whom 23 were newly enrolled.

Four candidates have received the degree in the year and a half since its establishment. This number of holders of the Master of Philosophy is still too low to permit a prediction of the eventual role of the new degree in supplying faculty to Canadian universities. Nevertheless, it is promising for its future that the prospective careers of these first four do not deny the hopes for the new degree. One of the four graduates, J. S. Brownlee, was in the honour course in Modern History as an undergraduate. In each year he obtained first class standing. His interests then shifted to East Asian Studies. He obtained the M.A. in that field in 1964 and the Phil.M. in 1965, having written an essay indicating that certain early Japanese literature provided a source of historical materials. He is spending the current year

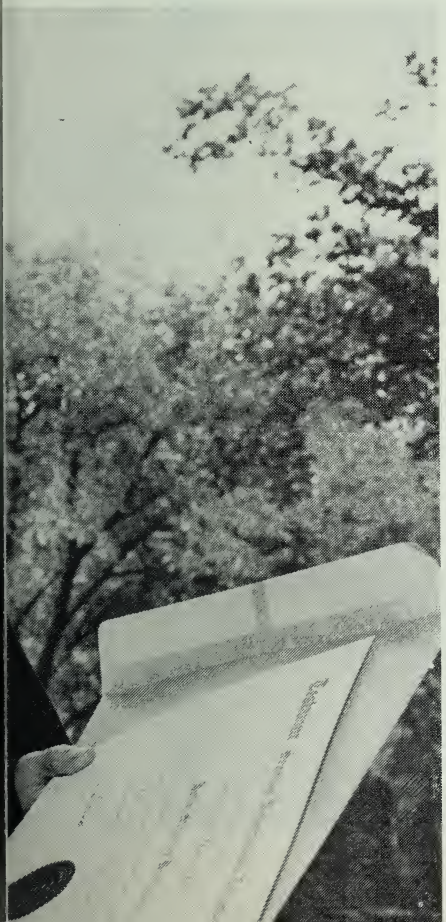


Dr. Eastman, the author of this article, is Professor in the Department of Political Economy, Associate Dean in the School of Graduate Studies (Division I: Humanities & Social Sciences) and Chairman of the Phil.M. Committee.

The young man holding his diploma at right is John Brownlee, first to earn the Phil.M. degree at Toronto.

f Philosophy start teaching

studying in Japan and will join the faculty of the Department of East Asian Studies of the University of Toronto next year. G. H. Paterson graduated from the general course with a concentration in English in 1962. He immediately continued into an M.A. program, obtained that degree in 1964, and was accepted to Phil.M. candidacy. He obtained the degree in 1965 after having produced an edition of Lord Acton's letters to J. W. Gross to which he wrote a preface. He now lectures in English at the University of Manitoba. The two other holders of the Phil.M., one in Political Economy, the other in English, have proceeded to Ph.D. programs.



The University of Toronto established the Master of Philosophy in response to two clear needs. One need is to provide well trained staff for faculties of Canadian universities which are inexorably greatly increasing in size; the other is to provide a graduate program more suited than the Ph.D. to certain types of intellectual interests and to certain individual wants.

The increasing number of men and women of university age and the increasing proportion of this group that wishes to go to university is causing the well understood expansion in enrolment in Canadian universities.

Full-time enrolment in Canadian universities is now 201 thousand, or exactly in accordance with the predictions made in 1963 by Dr. Edward F. Sheffield, the Director of Research of the Canadian Universities Foundation, who is to become a professor in

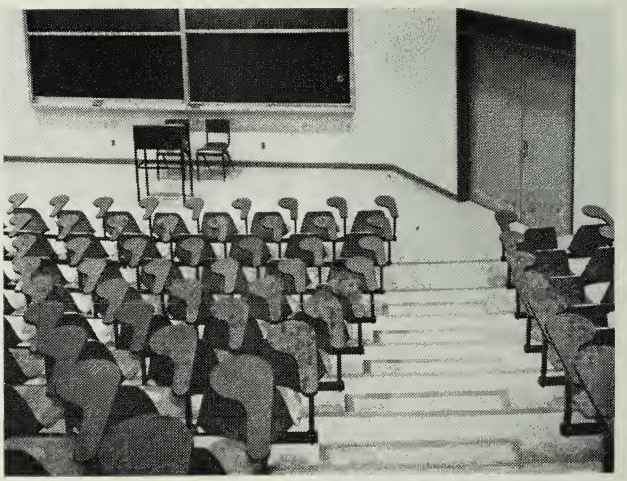
the Department of Educational Theory of the University of Toronto next year. Enrolment is expected to rise to 340 thousand in 1970–71 and to 480 thousand in 1976–77. Should this increase in enrolment bring about only a commensurate increase in the number of university teachers, their numbers would rise from the present 16,800 to 39 thousand in 1976–77. In fact, a reduction in the ratio of students to faculty members is very desirable in order to reduce the size of undergraduate classes, some of which are already too large. In addition, an increasing proportion of university enrolment is at the graduate level which absorbs greatly more faculty time per student than does undergraduate instruction. Both these needs point to an increase in university faculty more than proportionate to the increase in student enrolment.

The tremendous demand for new faculty this year is typical of what can be expected for many years. In 1966, the size of university faculties in Canada must increase by 2,400 if the student to staff ratio is not to rise, for enrolment will increase by about 30,000 students. But more than 2,400 university teachers must be recruited because approximately 1,000 present members of university teaching staffs will withdraw from their present occupation. Thus Canadian universities must obtain the services of at least 3,400 qualified university faculty in 1966 or educational standards will be threatened.

The increase in demand for university services that is occurring in Canada is also occurring elsewhere. The expansion abroad directly affects the position of Canadian universities

(*Continued on Page 118*)

THERE'LL BE NO SHORTAGE OF PEOPLE FOR THE TABLET-ARM CHAIRS — BUT WHAT OF THE LECTERNS?



AIDED BY FOUNDATION, UBERT DE BONI AND TED TUCZYNSKI USE ULTRA SONIC ENERGY TO SPEED CHEMICAL REACTIONS

Tomorrow's Professors (II)

Ford Foundation grants a key to more engineering teachers

In Peterborough's Trent University, George Hamilton is now teaching mathematics; in Waterloo, Paava Vuorinen lectures on aerospace problems; and at Queen's, William Watt will soon be instructing in mechanical engineering. At Quebec's Laval, Andre Galibois lectures on metallurgy and materials science; and in Ottawa's Carleton, Miles Copeland teaches electrical engineering.

All, as newly-appointed assistant professors, are playing their part in equipping Canada to match the challenge of the space age. All have one other thing in common – they received an important part of their advanced training with Ford Foundation support in the University of Toronto's Faculty of Applied Science and Engineering. They provide just a few examples of what has been achieved in three years since the Ford Foundation anounced its decision to grant $2,325,000 to the University to support higher education and research in its engineering departments. Many others have opted to stay on at Varsity in teaching roles or to continue their research.

Faculty leaders estimate that, over a five-year period, the grant will directly help nearly 150 senior students

destined for teaching posts in various universities throughout the world. This is not the whole of the picture. Much of the money is being spent on "capital" improvements, on provision of buildings and the purchase and installation of important items of research or teaching equipment that will then be available for years to come.

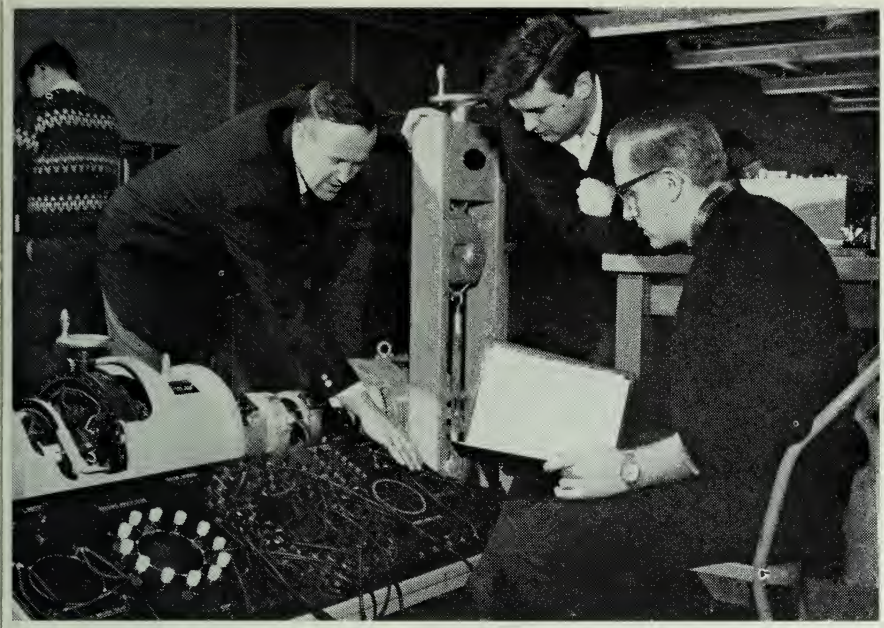
In the department of mechanical engineering, eight of the professorial staff have received capital grants amounting to more than $100,000 for equipment and additional moneys went for graduate students and post-doctoral fellows. Department head Professor C. Ross Lord commented recently that "the spirit and vigour of our research and graduate activity, as well as the number of students and research projects, have risen during the period of the grant's effectiveness. Many things have been done which would not have been done so early — or at all — without this assistance".

The latest report of Dr. James Ham, head of the department of electrical engineering, provides a good example of the way such money has been spent, and of the results achieved. Of twelve promising students who received post-graduate fellowships, one, Dr. Copeland, has already been mentioned. Dr. Bernard Pagurek, a second, now holds a National Research Council post-doctoral fellowship at London's Imperial College of Science and Technology and hopes to start teaching in a Canadian university in September. Seven others are working here for Ph.D.'s and six of them hope eventually to become university engineering teachers. Of four senior research fellows supported by the fund, Dr. John Undrill from New Zealand and Dr. Narayan Gopal Swamy from India and Imperial College are still instructing and doing research. Dr. Don Chambers has returned to Ireland to teach. The fourth was Dr. Vuorinen.

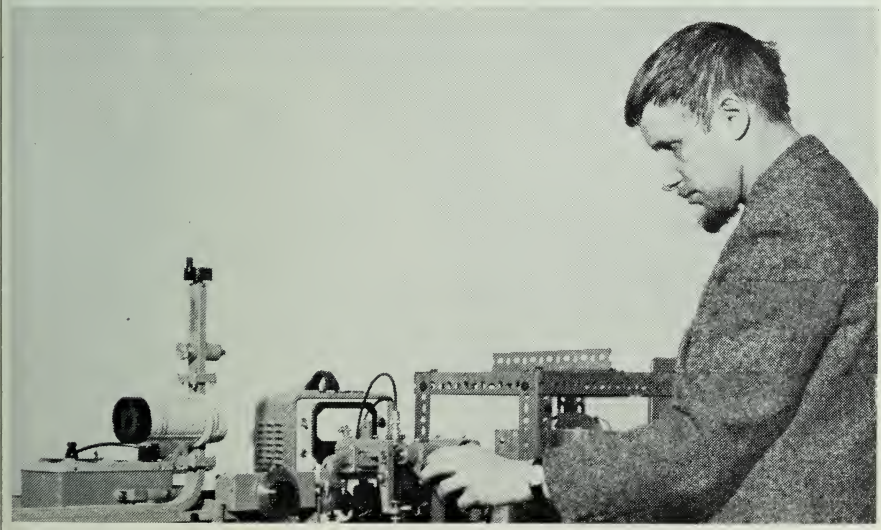
Years spent by these students at Varsity have been productive in many fields of electrical engineering. Foundation-supported students have been authors or co-authors of seven papers published in learned journals. Two departmental reports published by other students have aroused great interest.

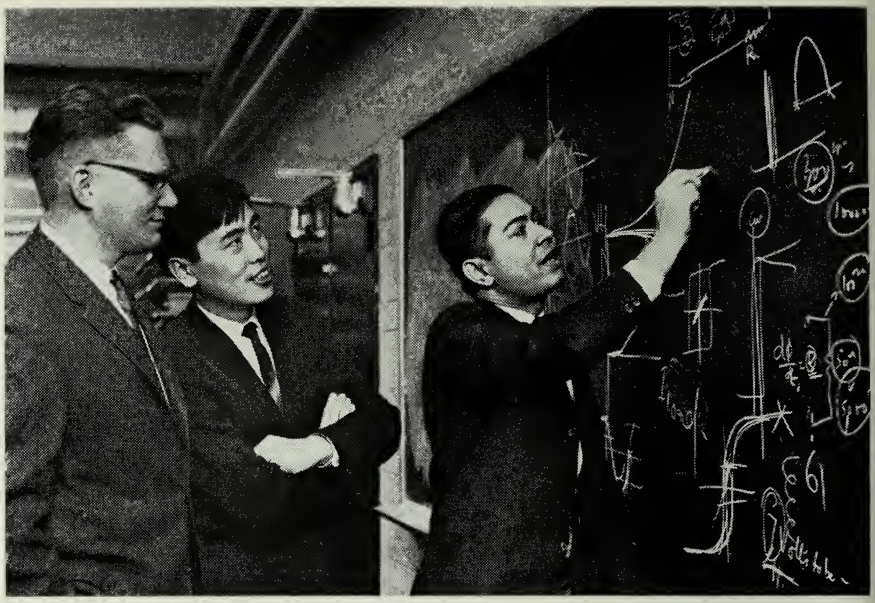
Another use of Ford money has been to bring to Toronto and to Canada as "visiting professors" for short periods of time a number of men who are pre-eminent in their fields. The presence of these men and their lectures on subjects that are not too well understood have attracted many bright students and have enabled the departments to grow more rapidly than would otherwise have been possible. Each by his presence has helped to provide "critical mass" that is so essential to research groups.

One such visitor was Dr. Howard H. Rosenbrock of Cambridge University in England, an expert on automatic control systems; another was Dr. Sumgadai Seshadri from Sylvania Electrical Corporation in the United States, whose field of expertise is microwaves and masers. A third was Dr. G. K. M. Pfestorf, one of West Germany's foremost research administrators and an international authority

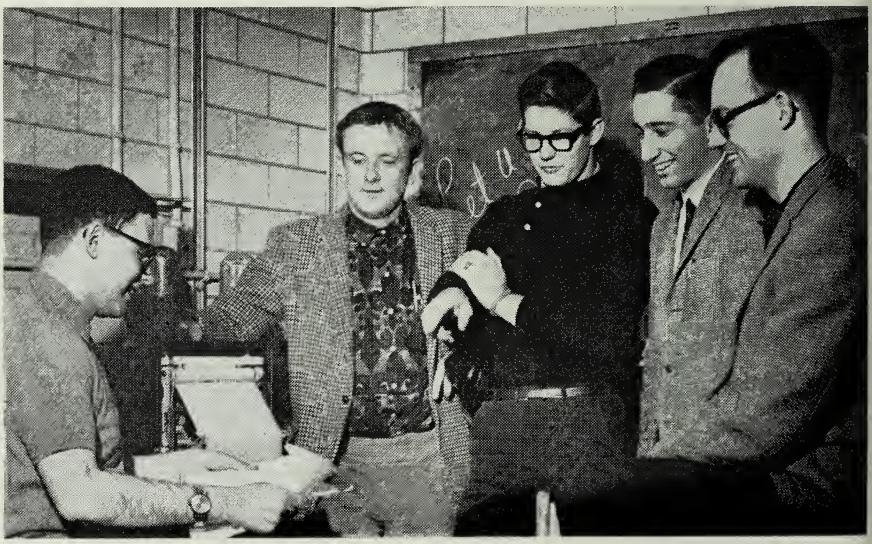


Above: Professor Miles Copeland with students at Carleton University. *Below*: Professor Paavo Vuorinen is in aerospace research at University of Waterloo. Both were helped by the Ford Foundation during advanced study at University of Toronto.





Above: With Foundation help, Hanno Treial, Gar Yip and Shashi Dewan work for U of T graduate degrees in electrical engineering. *Below*: Other post-graduate students include Gary Zone, Lieven Gevaert, Juris Apse, Kent Young and Edgar Dewar.



on ultra high voltage transmission systems.

Professor Pfestorf, who was here for six and one half months, lectured students formally for two hours a week on high voltage engineering but even more valuable to the department was the fact that he always kept an open door to those who wished to consult him informally. Modest about his own contributions, Dr. Pfestorf plays down the part of teachers. "Humans are funny," he says. "They have a mania for school yet everything is published. I can teach what I have learned in my life-long experience but the basic science is to be found in books and the good student can teach himself. Lazy students may exploit a teacher for a time but the end result will be that they will fail."

Dr. Pfestorf confesses that he never wanted to be a teacher. He spent 20 years of his earlier career with Physikalisch Technische Reichanstalte, or "PTR", the German equivalent of the National Bureau of Standards or the National Physical Laboratory. He was in Thuringen when the war ended and fell into Russian hands. Later, he made his way to the West and was asked by the Allies to undertake reactivation of PTR in West Germany.

Since then, Dr. Pfestorf has worked with Defence Research Laboratories in Australia and with the Indian Research Council. In 1954 he returned to West Germany at the request of the government of Saxony to take over the University of Hanover's Schering Institute which deals with high voltage problems.

Senior research fellows, although they come here ostensibly to learn, have also contributed to the two-way exchange of ideas in a major way. Thus, Takemochi Ishii, who came to the department of industrial engineering with an M.D. and a Ph.D. from Tokyo, brought interesting ideas on the optimization of production scheduling in machine shops and also gave a course of lectures on the currently most interesting problem of machine recognition of printed characters. His major research contribution, however, has been in the field of recognition by machines of hand-scribed numerals and symbols, including those that are poorly written. Dr. Saburo Tsuji, also of Tokyo, who followed Dr. Ishii, is another who is interested in machine recognition of characters. His research has also extended to techniques for the measurement of eye movements in three dimensions. A third senior research fellow to join the department under Foundation auspices was Dr. Samuel Kotz. He is interested in comparing Russian and English statistical dictionaries and, on completing his fellowship, he joined the faculty as an associate professor.

There have already been some impressive and newsy "by-products" of the research programs. Under the leadership of Professor Richard L. Hummel, for instance, R. Kent Young, has helped to develop a new coating for heat-exchange surfaces that steps up the efficiency of boilers to a considerable extent. It has been hailed widely as an important step towards reducing the cost of desalting sea

water and is also being studied as a possible method of cutting the price of sulphuric acid.

Under Professor W. F. Graydon, graduate student Ted Tuczynski and technician Ubert de Boni have been using Foundation money to investigate the possibility of speeding up chemical reactions by subjecting the reacting substances to powerful beams of ultra sonic energy. Dr. Hari Sharma, working with Professor R. E. Jervis, is using beams of a very different sort — of neutrons, in fact — to reveal in hairs, cloth and other forensic specimens, trace quantities of elements that could not be detected by any other method. They have shown in this way that every element has a completely characteristic "fingerprint", after bombardment, which can lead to its recognition and identification, even when amounts present are far too small to be visible.

Demonstrating the infinite variety of modern chemical engineering interests, another group, working under Professor Olev Trass, is using shock tubes in which gases are accelerated to extremely high speeds, to cause chemical reactions by bringing molecules together in sudden and violent collision. Dr. J. G. Breckenridge, professor and head of the department, points out that of 65 graduate and post-doctoral fellows in his department, nine first class men are helped by the Foundation. Of these, six could not have continued post-graduate work without such support.

The largest single grant ($400,000) went to Varsity's Institute for Aerospace Studies, to enable it to build extensions to its laboratories north of the city and to transfer a great deal of heavy equipment, including an important wind-tunnel, from laboratories previously occupied at Downsview Airport, some miles away (Varsity Graduate, December, 1963).

The Institute has already acquired a fine international reputation for research that extends from re-entry problems of space vehicles returning from flights to Mars to more earthy subjects like noise and airplane safety. Thanks to Ford help, says Professor G. N. Patterson, the director, the Institute has been able to double the number of research students and increase the number of research projects from 70 to 130.

Another large grant ($325,000) met half the cost of new labs for the Department of Metallurgy and Materials Science (*Varsity News,* March, 1966).

Many have asked how the University of Toronto's Faculty of Applied Science and Engineering came to be singled out for such generous help. There seems little doubt that Foundation representatives were much impressed, both by visits they made to the campus and also by the brief submitted at their request by Dean R. R. McLaughlin. Another factor was undoubtedly the fact that in no other institution in Canada and in few in North America could the same amount of money have achieved so much so soon, with so great secondary results elsewhere. The University of Toronto educates more Ph.D.'s each year than all the other universities in Canada together.

MEETING PLACE

Journal of the Royal Ontario Museum

VOL. 1, NO. 7. SUMMER 1966

FORTY YEARS ON

THE MUSEUM'S VOLUNTEERS

STUDYING IRAN'S CROWN JEWELS

MEETING PLACE is published by the Royal Ontario Museum, University of Toronto. W. E. Swinton, Editor.

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FORTY YEARS ON

Reflections on museums in England in the past, and in Canada today

W. E. Swinton, Director

FORTY YEARS ON, when afar and asunder, parted are those who are singing today" runs the song of Harrow School, the alma mater of Winston Churchill. Forty years on the museum story also looks somewhat different from the day when I joined the British Museum (Natural History) shrouded, that November day, in a London pea-souper that gave little to sing about.

Roget's Thesaurus gives a number of interesting synonyms for museum, none of which is "a home of the Muses". They are accumulation, antiquity, exhibit and collection. The British Museum was all of these. It was a century and three-quarters old, it had an immense accumulation of specimens that formed its usable collections, usable for research for any who liked to devote himself to the task and mainly usable for the exhibits.

Much as museum curators like to think of a museum as their own preserve, the British Museum has always thrown its doors open to scholars and students. If in these early days much of the collection was exhibited in serried rows and ranks of specimens, one must confess that the arrangement had much advantage. There was little aesthetic about it, but what a convenience when one had a difficult specimen to identify. One walked down the rows until a near match was obtained. Then of course the study, description and publication of perhaps a new form began. And what a boon for teaching the university students, the classes of embryo nurses, dental and medical students that came in.

The museum was a civil service department unconnected with any university except by the association of its individual members. Members of the scientific staff were fortified by their education but there were then no established means of museum education. Museum practice was strictly controlled; no casual arrival at the office or departure from it was allowed. We worked six days a week with a rotating duty roster for Sunday. A policeman at the entrance terrified the very young by his presence. There was (and is) no entrance charge and school parties were then few and far between. Twice daily, at 11 a.m. and 3 p.m. the official guide lecturer, in

episcopal voice, intoned the natural history lessons of the day and cast a scornful eye over his ignorant flock.

Absences from the museum were seldom and the few expeditions were organized with great care and deliberation. Equally deliberate were all instructions to the staff, the senior members of which acted, and often appeared, like minor prophets. I just escaped the stipulation that museum scientific staff should wear top hats and frock coats. However attired there was no doubt that they were scholars, each swimming strongly in his academic pool, so that in the early days it was a frightening experience and responsibility to join the staff.

If the seniors had the demeanour of biblical prophets, the trustees were gods. The Archbishop of Canterbury, the Lord Chancellor, and the Speaker of the House of Commons were the three seniors. To join the scientific staff one had to have a nomination from one of them, then sit the Civil Service Entrance Examination, appear before a selection board, all after getting at least second class honours in an appropriate subject.

W. F. P. Barbellion (Bruce Cummings) in his *Journal of a Disappointed Man* records his entry to the museum a few years before my own. "They gave me a ruler, a writing pad and a pencil but they did not tell me what form (grade) I was in" and he went on to draw a close similarity between the curators (Keepers) of the museum and the ancients mentioned in Gray's Elegy "Each in his narrow cell for ever laid, the rude forefathers of the hamlet sleep".

The museum was a giant library of objects at the call of the visitors but it went very little out of its way to meet them. Yet its scientific output of papers, monographs, books and guides was fantastic. Much of this was due to the wonderful libraries the museum has always maintained.

There were, of course, many other museums in Britain, national, municipal, university, and those owned by private societies. It is also true that the Museums Association, the first of its kind, had been formed in 1890 in an endeavour to bring together those curators who believed in a *museum* profession and its development for the public service.

It has been consistently true, in my experience, that the owners of museums, whether governments, city councils or universities, have had little real idea of the museum's value or potentiality, or even, despite their protestations, of what goes on in museums. Not until some public figure discovers "museums" like a new religion, or some public institution decides to give financial stimulus to a museum project or cause, is there any awareness of their merits.

In Britain, in 1928, the Carnegie United Kingdom Trust commissioned a scientific member of the trustees of the British Museum, Sir Henry Miers, to produce a report on the non-national museums. "To put it bluntly," the report said, "most people in this country do not really care for museums or believe in them." Despite this, the far-sightedness of the Carnegie Trust, the guided use of some of its money and the constant co-operation with the Museums Association altered the whole picture.

A scheme of curatorial and technical education with certification was inaugurated and this is now accepted, and required, by most of the museum-owning authorities in Great Britain. Furthermore, the scheme has been satisfactorily adopted in New Zealand, Australia, and South Africa but rejected in Canada.

Grants and advice to museums in generous but not too generous amounts, have led to museum recognition and to self help in many cities, towns, and villages. Travel grants to curators have led to the widespread knowledge of what goes on in museums in other countries and to the establishment of an unofficial but very real museum fellowship throughout the world, and not only on our side of the iron and bamboo curtains.

To make a long story short, these things have all combined to a new enlightenment, to the recognition by the British Government of the value of museum services and the need for their continuation. Following an exhaustive report in 1963 by the Standing Commission on Museum and Art Galleries, a national and regional scheme for museums has been established and a Big Brotherhood of Museums has come into being, though not in that name, whereby the services of experts in curatorship, preparator's craft, and conservation are available from the large museum to the small, from the regions to the communities.

Not all members of the present British Government regard this service as adequate but there is no doubt that forty years have seen the transformation of museum and art gallery services through exemplary co-operation.

The need in Canada for a similar transformation is even greater, for the territorial and financial problems are themselves greater. We have national museums, somewhat surprisingly well favoured by government; we have university museums, with the ROM the greatest in the world, and innumerable small museums starved for money, manpower, and guidance. The Centennial promises to produce a flood of new museums and one can only hope that the flood will last sufficiently long to keep them afloat. The prospect of museums, founded in temporary affluence but soon stranded with the recession of the financial tide, is only too familiar.

One would like to think that a new urgency in the recognition of the museum's place in education and society, in the setting of standards for those who would devote themselves to curatorship, and an assurance of co-operation among the various provinces and museums, will be recognized.

There is a Canadian Museums Association, with clearly defined aims, but the geographical difficulties in frequent consultation between curators and the discussion of their problems prevent that collaboration that is the essential part of "Association".

The major problem is, however, one of recognition in high places. Libraries have long been regarded as cultural necessities whereas museums have at best been thought of as luxuries. Even Andrew Carnegie, who had much to do with both, thought so. It there anything less useful in an accessible collection of objects than in a collection of books? Museums do not usually lend objects but library reference collections are amongst a library's most important possessions.

It is true that a "museum-piece" has often a derogatory flavour that one does not observe in "library-piece" or "literary-piece". Yet the association of museum-pieces, their collection and care, in one place, probably does much more to help the public to recreate an atmosphere and to recapture an environment than does any association of books. It is this that makes the museum more like a university, "a place of universal studies", the inspiration to the "well-rounded" individual. As such, museums provide a window into scholarship and a meeting-place for those interested in such scholarship and the adventures of learning.

One sees now the realization of this notably in the schools. School visits are yearly increasing in number and importance. Children are led from these to come again on their own, or better still, to bring their parents to enjoy a new series of impacts, the beginning of a new age of visual appreciation. Many of us in museums are excited about this and see no problem in a greater involvement between schools and museums and, above all, directly with children. We think of children not as children but as "intelligent people who are eagerly wanting to know and interested in the great adventure of the world".

Museums today are not only store-houses of knowledge but, as in the ROM, in the forefront of the making of knowledge. Many of its staff are university teachers, even more are familiar and friendly television personalities. There is nothing alien to children in this environment: it is one they would wish to join.

On the other hand, we in museums increasingly realize the responsibilities

laid upon us to collect, preserve, display, interpret, and rearrange objects and materials in ways unknown to our fathers and by means that were not at their disposal. We live in a scientific age, where science is the servant in a hundred ways. As museum curators we must couple our academic knowledge with other professional skills.

Today, museums live as modern institutions in a modern world, a world of daily scientific excitement and academic enrichment. We are indeed meeting places for all who care to come, and they are many. Can we not claim, as Beaumont claimed for the Mermaid Tavern, "that our walls have echoed with the words that have been so nimble and so full of subtle flame".

All this can be proved only by use. USE is the keynote of the MUSEUM—take away the USE and it is MUM—silent and secret—and forty years' experience has shown that though silence may be golden, it does not create, staff, or explain museums. It is not an educator or the conveyor of education. Museum curators please note.

THE MUSEUM'S VOLUNTEERS

What DO *those women do?*
The answer is, a unique program of service.

JEANNE CARTER and NORA MCRAE, Members' Committee

WOMEN'S committees attach themselves to many kinds of organizations and institutions in North America. They raise great sums of money, get buildings built, expand art collections, conduct mammoth membership drives; they run gift shops, book stores, even cafeterias, to raise funds. The Members' Committee of the Royal Ontario Museum does none of these things. It exists to serve *directly* the curators and staff of Canada's largest museum.

Even in its origins, this committee is unusual. Its aid was offered spontaneously, not sought by the museum. Nine years ago a distinguished patron of the arts in Toronto, Mrs. Arnold Matthews, asked an informal study group of college graduates, "Why don't you do something to help the museum?" We had never thought of it before. Three of our members went to the

director, then Dr. Theodore Heinrich, to find out if the museum wanted any help. The answer was "Yes", and a working committee was born. It was agreed from the beginning that the number of volunteers would always be small: it is limited at present to 40 active members, plus some sustaining members who have served a minimum of seven years. The committee, moreover, would work as a group only for major special exhibitions; throughout most of the year the members would work individually in the labs and offices behind the scenes, in those departments whose curators requested help.

At this time the museum was preparing for the most ambitious exhibition it had ever undertaken; "Seven Centuries of English Silver". The three women who had approached the director, Mrs. William Randall, Mrs. Robert McRae, and Mrs. J. A. Rhind, quickly found nine colleagues. One of the first projects was to compile a comprehensive list of all Toronto women's organizations, which we hoped to interest in the silver show through personal contact. We also volunteered to give introductory talks and guided tours of the show to the general public; but for this, more strength obviously was needed. Each of the original dozen invited two others to join. Then followed eight lectures and several weeks of intensive study. When the exhibit opened in January 1958, the 36 women met the public as volunteers, not experts, inspired by an enthusiasm they did their best to share.

When the show closed, the committee formulated a more permanent plan of action. Our purposes, we decided, were to assist the museum staff as asked, and to encourage public interest in the institution. To do this effectively a continuing program of self-education was essential. The group was now officially named the Members' Committee of the Royal Ontario Museum. With encouragement from Mrs. O. D. Vaughan and the interest of Mrs. Edgar Stone of the Museum Board, and with Mrs. Hugh Downie as our official liaison with the administration, we looked for ways to be useful.

Behind the scenes, we found we could best help the curators by performing simple routine tasks such as filing, cataloguing, and mounting. Each member is assigned to a specific department, where she is expected to work half a day each week. The jobs are many and varied. In the Mammalogy Department, one volunteer is mapping the locations of specimens collected in British Guiana; another is re-organizing files with cross-references for all species and sub-species. Several are busy mounting butterflies and other insects in the Department of Entomology—a delicate operation. Others are sorting rocks for the mineralogists, and bones for the palaeontologists. In

some departments, volunteers make labels; in others they have organized card catalogues of offprints from periodicals, and of photographs. We have carried out many jobs in the Department of Ornithology, including the washing of birds' eggs. One volunteer is typing up the field notes of an archaeological expedition in Iran; for variety, she washes pottery sherds from the site of ancient Jericho. It might be pointed out that many curators go to a great deal of trouble to make the work interesting.

One large project was the making of dust covers for valuable Chinese volumes in the Far Eastern library. One of our volunteers in this department also serves as an expert in blue and white porcelain. In the museum's main library, volunteers spent untold hours re-labelling books as part of a general re-organization. We have also worked on the Canadiana library, and with the collection of early Canadian coins. In the European Department, one volunteer is making a study of clocks and watches, while another is doing research on the R. S. Williams collection of musical instruments. For Information Services, material is being gathered for a history of the museum: veteran staff members and friends are being interviewed and their recollections recorded. One year, the committee prepared a weekly feature for one of the daily newspapers, a "Museum Treasure Hunt" showing a different object each time.

Perhaps the most unusual job has been in the Textiles Department. Volunteers there are accustomed to sewing a fine seam, sorting, mending, cataloguing, and mounting materials. One agreed to act as a model for a series of photographs showing changes in *haute couture* over the last 40 years—and to preserve strict museum-like authenticity, changed her hair styles for each period, marcelled waves, Gay Twenties bob, upsweep, and feather cut.

Most placement jobs require some training which eventually makes the volunteer more valuable to the curator. At the same time, knowledge thus gained is a great joy.

Most important from the staff's point of view is that a volunteer be faithful, regular, and prompt. It is the committee's responsibility to instil in its members these attributes and to establish the number of hours each is expected to work in the year. The placement chairman deals with curators' requests and, having found out the job requirements, assigns volunteers, taking into consideration their preferences and abilities.

On occasion, the committee as a whole has made possible new projects which could not otherwise be undertaken. In 1958, counting on members to do the interviewing, the museum undertook a survey of its visitors. A random sampling of 4,800 persons was taken over a year. The published

results were among the first to spell out exactly who the museum visitor is.

In the area of education, members of the committee are trained to teach school classes in the North American Indian, Eskimo, and Canadiana galleries. For two years we also helped the Education Department conduct a tour behind the scenes for university freshmen, which we hope will be offered again.

Outside the museum, four volunteers have joined with the Education Department to run a Museum Club at the Crippled Children's Hospital. At each meeting a small group of children who are undergoing active treatment at the hospital are given a short film, talk, and showing of related museum objects.

The committee works in many ways to foster interest in the museum throughout the community. Each year we hold an Easter party for the children and grandchildren of the museum's Annual and Life Members and its staff. A theme is chosen which is related to topical museum interests, and the youngsters are introduced to it through the collections and special events. For example, the year that our present director, Dr. W. E. Swinton, a world authority on dinosaurs, joined the staff, we held a dinosaur party. The year that four of our own members were trained to teach classes in the Eskimo gallery, we gave a party about Canada's northern peoples: children in seal and caribou headdresses roamed about the gallery displays and patted live samoyeds. The following year, an archaeological theme reflected our museum's widespread expeditions in the Old World and the New. "Festival in India" celebrated the opening last year of a new exhibit showing the flora and fauna of the southern Indian rain forest in a natural setting.

This year "Journey to Japan" served to publicize the special exhibition of Art Treasures from Japan, which opened a fortnight later. Each child was given a rolled scroll with a map of the museum, showing where special activities were under way. In the Oriental galleries on the third floor, they learned to sing the Cherry Blossom Song to the accompaniment of the *koto*, a stringed instrument; nearby there was a talk and display of ceremonial dolls; a few minutes' walk further, a practical demonstration in the art of wearing a kimono. Casual visitors, this year for the first time, were welcome to join these groups. In the workrooms downstairs, the children with total concentration tried their hands at brush painting and origami. As always, the party ended for ticket holders with a box lunch in the lower rotunda, where decorations made by the committee added colour and information about the party's theme. Before going home each child received a simple Japanese souvenir.

Time alone will tell of captured imaginations and moulded futures. In a world where museologists are scarce, we would hope some child might be inspired to think of a museum career. And we have shown all the children that the museum is a lively, interesting place where things happen.

From the committee's point of view, being trained to give tours of the special exhibitions which come to the museum is the high water mark. Here we have the privilege of being lectured to and taught by curators who are authorities in their fields. Twenty-six volunteers took tours round the Jubilee exhibition in 1962 of Art Treasures from the ROM. We became amateur Egyptologists to tell people about the Tutankhamun Treasures. With the aid of a Montreal volunteer, our committee even arranged two tours for residents of Toronto whose native language is French. A year's study under the direction of the curator of the Far Eastern Department prepared us to take tours of the great exhibition of Japanese art. For special exhibitions we also help to distribute posters and to man the sales desks.

We are beginning to develop a general touring service, and have given several "treasure tours" to convention and special groups. Eventually we would like to offer a general walking tour on a weekly basis, and if enough interest were shown and guides were available, every day. We also hope to work next year with the Education Department in preparing short gallery quiz-guides for young visitors, and with the Canadiana Department in organizing slide lecture units to be lent to groups in the community.

So far this article has dealt with specific ways we generate interest in the museum. There is also a broader function of public relations. As a small group of eager volunteers our work has been one of involvement and our enthusiasm has spread to interested friends and supporters in the community. We act as a sounding board, and are therefore an effective source of public opinion. By listening to what people are saying—or not saying—about our museum we often hear things which would not be said to museum officials. Once inside the museum we bring a liveliness with our usefulness. In appreciating the museum from the layman's point of view we are in a position to serve not only the curator but also the general public. In our touring we can add the personal touch and transmit our own love of museum objects.

The Members' Committee chairman attends the annual meetings of other cultural organizations in Toronto, and we are active participating members of Volunteer Committees of Art Museums, attending conferences throughout North America. In these interchanges of ideas we are constantly on the alert for new ideas to adapt for use in our own museum.

To be more effective volunteers we try to arrange a continuing program of general museum education. In a year when there was no special exhibition we studied and took ten lectures on Canadiana. With widened horizons we have made expeditions to local historical museums such as Pioneer Village and Mackenzie House, and to Dundurn Castle in Hamilton, and Niagara-on-the-Lake.

It has taken time to win the approval of the museum staff—to show that we were not just a group of social butterflies who lighted periodically on their building. We have gained wide-ranging if fragmentary knowledge. In our unique role as volunteers in a great university museum we have been privileged to work for experts in many fields. We have given good service but we have been the real beneficiaries. As we have become more familiar with our museum and its program and staff, we have become more enthusiastic ambassadors and much more effective volunteers.

STUDYING IRAN'S CROWN JEWELS

The world's most dazzling collection of gems receives its first scientific examination

V. B. Meen, Chief Mineralogist

THE sun is shining on the japonica and pansies in the small garden in front of our house and on the snow-capped Elburz mountains at the rear. This is Tehran, capital of Iran, the Persia of former years. Even though the jet has superseded the camel on the transport routes of this country, this city is still a stopping-place for the traveller. Last week more than 1,700 foreigners broke their air journey here for one reason or another and during that week I had the feeling that, somehow, I had rubbed shoulders with most of them.

As in most cities, there are conducted tours to the points of tourist interest. Although I have not had time yet to indulge in such a tour, I do know that the Government buildings, the Gulistan Palace and the Bank Markazi (Central Bank) are on the itinerary. It is at the last named that the tourists and I meet. This is not, as might be supposed, while we are turning traveller's cheques into Iranian rials. Instead, it is while we mutually "oh" and "ah" at the fabulous wonders displayed deep in the central vault of the Bank. For

it is there that the Crown Jewels and the treasures of Iran are housed.

Until six years ago, this treasure was kept in dark, dusty vaults where only on very rare occasions any outsider could get a glimpse of them. In 1960, the best pieces were moved to a specially prepared vault in the newly-created Bank Markazi, in the centre of Tehran. Here they are protected by thick walls, great doors, electronic alarms, automatic gates and armed guards. But they are open to public view. The vault is fitted out as a museum gallery, air-conditioned, and with individually lighted display cases. It is open to the public for a few hours, four days a week, at a fee of 100 rials (about $1.45 Canadian). I am there on most of these days and to my surprise find that three to four hundred others visit during each open period.

The collection is an amazing one and from the above remarks, it should be obvious that it is known by experience to a great many people and by reputation to many times that number. Yet, strange as it may seem, it has remained unknown to professional gemmologists. In the well-thumbed reference books used by such experts may appear a phrase such as "believed to be still in the Iranian treasures" but no description of the items of the collection or the gem-stones contained in them has been made available.

The Royal Ontario Museum's interest in the Iranian Crown Jewels began early in 1964 when my friend Martin Ehrmann, a gem dealer of Los Angeles, told me of seeing the collection during an enforced stop-over in Tehran just a few weeks before. It occurred to us that he and I should make a study of it together. It happened that I was planning a study of some of the gem areas in Southeast Asia in the winter of 1964–5 and so I arranged to return home by way of Tehran to see the collection and to enquire if it would be possible to make arrangements to carry out a study of it.

For several days in late January 1965, I discussed the proposition with officials of the Bank, and a few weeks after my return to Toronto I received word that the Royal Ontario Museum had been granted permission to carry out the study. By now it was realized that a study, even of the highlights of the collection, would take several months. Martin Ehrmann felt that he was unable to put that much time into it and decided to drop out. Months of planning followed and on February 3, 1966, the Royal Ontario Museum group arrived in Tehran.

I do not know what we would have done without the help of the Canadian Ambassador, the Hon. Paul Malone and his staff. Not only was a furnished house ready for our inspection, and eventual rental, but additional items of furniture, lamps and portable oil heaters were lent to us to make things more comfortable. Ali, an Iranian on the Embassy staff "knows every-

body" in Tehran's 2,000,000 population. It was he who liberated our boxes of equipment from Customs and took us to stationery and printing shops, and to rental agencies for typewriters and dictating equipment. Indeed, almost daily, he acts as go-between, over the telephone, when we have problems and our English-Persian sign language fails us.

We are quite a party. Dr. A. D. Tushingham, the ROM's Chief Archaeologist, is here to study the objets d'art, regalia, and settings of the jewellery. Grant G. Waite and E. B. Tiffany, Research Associates in my department, are with us to study the gems. Mr. Tiffany is on leave of absence through the courtesy of his employer, Henry Birks and Sons, Toronto. Then there is Leighton Warren, the museum's photographer. The financial support for our operations has been most generously provided by the Birks Family Foundation.

Our days seem backwards. On Tuesdays, Thursdays, and Sundays we may enter the vault with the public at 3 p.m. and may remain until 6 p.m. On Friday, the Muslim holy day, the public period is from 10 a.m. until noon. On Monday, Wednesday, and Saturday, we have the vault to ourselves from 4 to 7 p.m. It is in these periods that we get most done. It is then that we may lay electric cables across the floors to supply power for concentrated light by which to study and photograph. In shirt sleeves we can work without having the public breathing down our necks. Naturally, on public days we are a source of extra interest to the visitor. One visitor could not resist whispering in my ear, as I muttered data into a portable dictator and as I measured the size of emeralds and diamonds in a dazzling tiara, "Mr. Bond, I presume."

Our days, however, do not begin with the work in the Bank. Rather, they start right after breakfast with transcription of notes, calculations of gem sizes, and so on, trips downtown to ferret out suppliers of all kinds of necessities, visits to libraries to delve into old records. Dr. Tushingham is often away before 7.30 a.m. to make the most of a morning in the British Embassy library. When dinner is over about 8.30 p.m., we are all just about ready for bed. About this time, Leighton Warren processes the day's take of record pictures.

The Iranian Crown Jewels have been gathered through the centuries by the former kings and emperors of Persia. Their acquisition has been varied. Some have been passed from generation to generation, their origin lost in the mists of history. Some have been mined and, of course, the pearls came from the Persian Gulf. Some have been gifts from other monarchs. Some have been brought into the country by gem traders such as Tavernier or

agents of the Persian monarchs who visited gem markets in other countries. By far the most have been gathered as booty in the conquests which the former rulers of Persia waged far and wide. Not a few items have been obtained through torture. The wars were not always favourable to the Persians and from time to time the Treasure was depleted. Today, however, it stands in its glory, tastefully displayed, pleasantly illuminated.

The gallery is 105 feet long and 46 feet wide and there are 35 display cases. Those located flush in the walls, like windows, have internal lighting, while those which are free-standing are illuminated by focussed pencils of light directed into the cases through small openings in the false ceiling. The floor is marble. The low level of lighting tends to control the level of conversation but when excitement over some especially beautiful item develops in a group of visitors, the noise level rises quickly. One Sunday, I added to the excitement. I was examining a gold emerald-studded dish cover and was endeavouring to adjust a flashlight so that I could see down into one of the stones with my monocular magnifier. In my efforts, I came too close to the glass and banged the flashlight against it. Immediately a device started hooting stridently, and silently, but with amazing speed, the great gates in the antechamber swung shut locking us all in the vault. Guards came running down the stairs to peer at us through the gates. As soon as it was determined that no harm had been done, the gates were re-opened and the excited buzz receded.

It seems almost impossible to give a brief description of the collection. There are cases devoted to objects of personal adornment, brooches, rings, earrings, necklaces, armbands, turban ornaments, and so on. In others, articles of apparel, mirrors, walking-sticks, and swords are displayed. Several cases are devoted to arms, mostly in the form of swords and daggers, but here and there is a firearm or two. Many cases are devoted to objects used in the former royal households—gold dishes, dish covers, water and wine flasks, wine cups, narghiles, candlesticks, and snuff boxes. Most of these objects are embellished with gemstones. Diamonds, emeralds, rubies, and pearls are everywhere. In addition to the displays devoted to groups of related objects, there are cases devoted to particular gemstones. The diamond case contains a number of diamond tiaras and hundreds of unset diamonds, scores of which are over twenty carats in weight and many of which approach one hundred carats. Here is the sword of the famous Nadir Shah, the scabbard of which is covered entirely by diamonds.

Two cases are devoted to emeralds, both set in objects and unmounted. I did not know so many emeralds existed. Many of them bear inscriptions

in Persian or Arabic. The size, up to two and a half inches across, the colour, and the number of these stones leave the viewer speechless.

Individual cases are devoted to rubies and to turquoise. Here, too, the gems appear in objects and unset. Three windows are devoted to pearls—pearls in ropes three feet long, pearls in tassels, pearls in jewellery—pearls. Here and there, an emerald has been added for colour. In another case a small open trunk casually spills its contents of pearls!

Three cases are devoted to crowns and other royal regalia. Here, one-inch diamonds vie with two-inch emeralds and rubies and hundreds of pearls, a quarter-inch and more in diameter, for the viewer's attention.

About a hundred years ago the emperor of the time, Nasser-ed-Din Shah, decided to "tie down" some of the loose gems lying in the Treasury. As a result, a terrestrial globe was produced in which the total surface of the globe and its stand is covered with rubies, emeralds, diamonds and pearls. This globe stands about three feet high and is said to contain more than 51,000 gemstones, numbers of which are more than an inch in diameter.

The throne is the largest item in the collection and it stands alone near the rear of the gallery. It is covered with gold sheet, in which large emeralds, rubies, and diamonds have been prolifically placed.

Undoubtedly for the women visitors the large wall case reserved for the jewellery of the Royal ladies is the most fascinating. Here are displayed tiaras, necklaces, bracelets, earrings, and brooches studded with magnificent diamonds, emeralds, and rubies. In one of the emerald tiaras, the centre stone is an inch and a quarter long and more than an inch wide. In one of the diamond tiaras, the centre stone is a pink brilliant an inch and a quarter long. A pair of earrings with interchangeable single diamond and emerald drops, each an inch and a quarter long, fascinates me, but my ears are relieved that these are not for me.

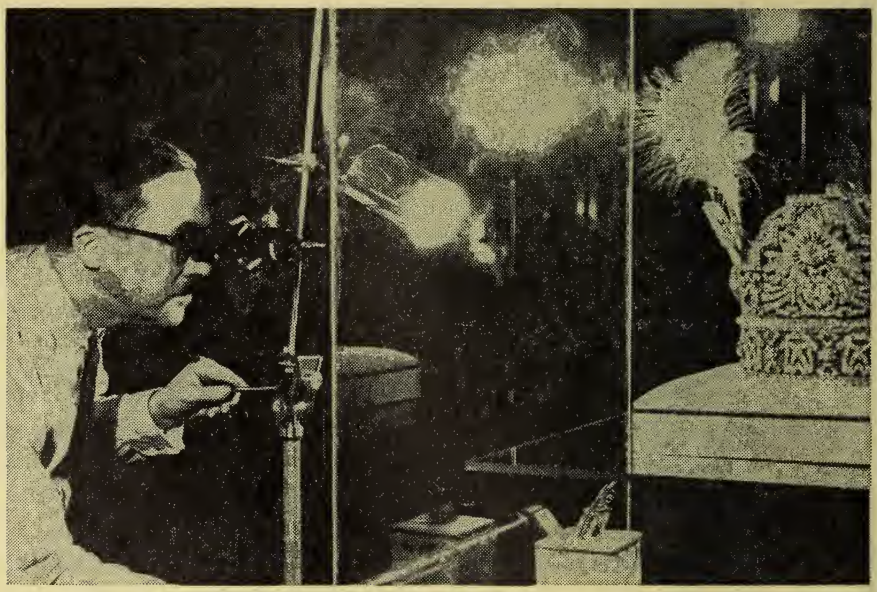
We are here to study, measure and describe the principal objects and gems in the collection. Although we are allowed to have the cases opened and to handle the individual pieces, the total number of hours allowed for this purpose is quite limited—in all, fourteen periods of about four hours each. The prime regulation concerning the collection is that whenever any case is open, nine of the leading men of Iran must be present. We are fortunate that they are prepared to give so much time to the project.

It has been necessary, therefore, that most of the study be carried on through glass. Back in Toronto, we had spent many hours in devising ways and means of doing this and came equipped. To our delight, the equipment is working as planned. For example, Zeiss monoculars, with a variety of extra

lenses, allow us to magnify a three-quarter-inch gemstone until it fills the whole field of view. Smaller gems look fine too. A rectangular grid, fitted into the eye-piece, allows us to calculate dimensions of objects quite closely. We keep a trunk full of equipment in a room adjacent to the vault.

But the big thrill comes when the cases are opened. For a few short hours, we are able to measure exactly, weigh precisely, determine optical characteristics accurately, seek for signatures or makers' marks, and handle lovingly a few of the largest gemstones and the most interesting pieces of regalia and objets d'art. In those few hours we clear up many of the questions which have arisen during the earlier study and which cannot be answered by examination through glass. Leighton Warren has the first known opportunity to photograph any of this great collection free of glass.

When we return to the Museum, we expect to have sufficient data to be able to provide accurate descriptions of the major items of this collection, which is certainly one of the world's finest. In addition to scientific papers on the subject, we hope to publish a large, copiously illustrated volume. This will be offered as part of Canada's contribution to the celebration of the twenty-five hundredth anniversary of the Monarchy of Iran, to be celebrated in 1967.



In a vault of Iran's central Bank, Dr. Meen examines the gem-encrusted Pahlavi crown. He uses a Zeiss monocular specially adapted to study jewels from behind a barrier of glass.

"Light for the Mind"

The philosophy of Lord Devlin (and his voice) help us to capture a best-film award

To be precise about it, "Light for the Mind" (16 mm., colour, sound, 23 minutes), proclaimed the best public-relations motion picture by judges for the 18th annual Canadian Film Awards in Montreal in May, was a project of the U of T Department of Information, publisher of Varsity Graduate. However, in view of the massive and imaginative assistance provided by others, the Department's role was a relatively minor one.

First of all, it takes money to make a motion picture: through the good offices of the President, a Varsity Fund grant was provided. Later, when the film's purpose appeared fuzzy, the President agreed to create a prologue that would supply a *raison d'être.*

The thankless roles of advisers on all aspects of the operation were accepted by two vice-presidents.

The film's intriguing title and theme were suggested by Thom Benson, executive producer for many important CBC television programs, after leafing through an old copy of Varsity Graduate. His inspiration was our report of the Address to Convocation by the Rt. Hon. Lord Devlin in 1962.

"So many men have lit so many candles," Lord Devlin had said, adding, "the time is come when the light must come out of the minds of men."

Mr. Benson's idea was seized on by Robert Barclay, who had been assigned to direct the film by Chetwynd Films Limited, the producers.

"I wonder," said Mr. Barclay, thinking out loud, "whether Lord Devlin could be persuaded to put his words on tape for us?"

When the request reached him, Lord Devlin, a U of T Doctor of Laws, *honoris causa,* said he would be delighted.

This objective won, Bob Barclay never looked back.

(Before this issue of The Grad is in the hands of readers, the film will have been televised by at least one Ontario station, and other television showings are in prospect.)

NORTHROP FRYE'S ILIAD

(Continued from Page 10)

comes to power through society's need for a personal leader, as does Julius Caesar, though Caesar had no *de jure* monarch to displace.

The ruler represents, though he does not embody, the upper order of nature, the world man was originally intended to live in. The conventional symbol of this order in the Elizabethan period was that of the music of the spheres, the Apollonian world, for Apollo was the god of music. Metaphors of harmony are often heard when there is a discussion of social order and music is regularly heard when the order changes. The supernatural is closely linked with music; when the ghosts of deposed princes walk in the tragedies melody is usually heard. A physical symbol of order is the stars in their courses; rebellion is symbolized by comets, "exhalations," and other similar aspects of meteorology that interrupt the sense of nature as predictable.

In Shakespeare's tragedies, as in the comedies, the settings are deliberately archaic. The form of society is closer to that of the Iliad, or of Beowulf, than it is to his own. Warfare is usually that of the heroes fighting in pairs. Prayer, too, seems Homeric, pointed reminders to the gods of sacrifices in the past which will be renewed in the future after a victory has been granted. In this world, the stoics and the thinkers seem helpless, as Brutus is in the face of Antony, who understands the principle of personal leadership where Brutus does not.

In insisting on the force and necessity of a ruling personality, Shakespeare comes close to the ideas of Machiavelli, who recognised that the qualities of leadership were not moral. Loyalty too, therefore, has little to do with moral judgment; its strength accounts not only for so many suicides in Elizabethan tragedy but also for the irresistible power of the motivation for revenge. Revenge is seen as a duty, a moral imperative, the call of conscience itself. This is difficult for a modern audience to accept, yet it is bound up with the need for hierarchy and order. The ordered society in Shakespeare is, to use Heidegger's term, ecstatic: its members are outside themselves, at work in the world, and their being is their function. The vital thread of Enorbarbus' life was the tie that bound him to Antony. When he abandoned his master, he could do nothing else but lie down and die.

It follows that, for the leader, there is little if any difference between reality and appearance, between what he is and what he seems to be. The prince is a *dramatic* figure; like the actor he puts on a show and the successful ruler is the one who appears best to society, and who wins his battles. War is often seen, in Shakespeare, as a socially unifying force, whereas peace breeds hatred. The leader who has the authority to expose his followers to death is the leader who commands loyalty. Timon tries to build up a peaceful society on

a basis of equality and mutual friendship, and sees it instantly disintegrate in front of him. If we start with the view that the head of the state should be a philosopher-king, we shall end with disillusioned reflexions about the little wisdom with which the world is governed. In Shakespeare's histories and tragedies the world is not governed by wisdom at all, but by personal will. Right imitates might: the process of holding power, however ruthless, is primary, and all justice follows from it.

From all this it appears easy to make a theory that Shakespeare worshiped strong rulers and admired ruthlessness. But Shakespeare has no theory of society: what he has is a vision of society, and that vision is so powerfully convincing that we accept it without question. His vision is a tragic one, in which death is the end of all action, and in which the actions which lead most directly to death are the strongest ones. No actual ruler is outside the operation of the wheel of fortune, and no triumph can be without its reminders of death, as the Ides of March come for Caesar. In the tragedies, the order-figure is killed early in the play and the tragic action starts after his death. In *King Lear*, for example, the order-figure, by abdicating, has destroyed his own social context, and has therefore essentially murdered himself.

There are two symbolic aspects of the order-figure in Shakespeare's tragedies. There is the deposed or murdered ruler, Caesar, Duncan, Hamlet's father, and the abdicating Lear, who represents a lost social identity. His archetype is neither Apollo nor Dionysus, but Hyperion, the sun-god's father, to whom Hamlet's father is compared. The other is the successful strong man, Octavius or Henry V. Such a figure unites Apollo and Dionysus, lord of both the order of nature and the heroic energy of fortune.

In *Hamlet*, there are three concentric tragic spheres, each with a murdered father and a nemesis: Polonius and Laertes, Hamlet and his father, Fortinbras and his father (slain by Hamlet's father). The story of Polonius, Laertes and Ophelia is an ironic tragedy of blood; the story of Fortinbras and his father is a vision of the turning wheel of history. In between comes the story of Hamlet, a magnificent vision of heroic energy poured out as a sacrifice to a dead father, to a ghost who returns screaming for blood from what is supposed to be a place of purification. Hamlet is forced to strike everything out of his "tables" that represents thought and feeling and observation and awareness, and concentrate solely on hatred and revenge. It is the paradox of tragedy that he shows us infinitely more than this, that he could never have shown it without the impulse to revenge, and that nothing is left of it except silence for him and the telling of his story for us.

II

Professor Frye's second lecture, "The Tailors of the Earth: the

Tragedy of Passion," deals mainly with *Romeo and Juliet, Troilus and Cressida* and *Antony and Cleopatra*, but ranges far afield over Elizabethan and Jacobean literature, from Kyd to Webster. In the tragedies of passion, Frye observed, the social order is split and there is no symbol or centre of social unity. In such a situation, loyalty is likely to be deflected from society and concentrated on sexual love or family loyalties. These three plays, in particular, are tragedies of love or passion, and they are Shakespeare's version of the tragedy of the son, the crushing out of vitality in a world where two social powers grind on each other. This vitality is Dionysian, the energy of physical nature, but because it is crushed the hero resembles Dionysus rather in his role as a dying or suffering god. Romeo's story follows the general outline of the various dying-god stories available to Shakespeare, in Ovid and elsewhere, the closest analogue being that of Pyramus. Troilus does not die in this play, but his role is similar dramatically. Antony is not young, but his tremendous physical vitality makes him the most Dionysian of the three: in fact Plutarch calls him the new Bacchus.

The women in the passion-tragedies have all the "white goddess" characteristics of someone whom it is death to love. Cleopatra is the tantalizing mistress, Cressida the treacherous siren, and Juliet the bride in the midst of enemies. The tragedy of love is the tragedy of Eros, a name which turns up in a significant context in *Antony and Cleopatra*, and Eros is also subordinated to his mother Venus. A tragic hero, then, may be an older man or a younger man, a paternal or a filial figure: the tragedy of order is the typical Shakespearean form of the fall of the older man, and the tragedy of passion the typical Shakespearean form of the fall of the younger one. Both types of tragic hero may appear in the same play, in *Hamlet*, for example, where two fathers are killed and two sons also killed in efforts to avenge them.

In the passion-tragedies too, there is generally a councillor-jester figure who plays a role somewhat analogous to that of Falstaff in *Henry V*. He often makes a set speech, calling attention to some central symbol of the play. Mercutio makes the Queen Mab speech; Enorbarbus describes Cleopatra on her barge. Pandarus, being little more than an old fool, is hardly capable of a set speech, but the Falstaffian paternal, or avuncular, relation to the hero recurs in him, and his repudiation forms the bitter conclusion of a very bitter play. Similarly, Mercutio and Enobarbus are the victims of the colliding social forces of the plays they are in.

The Queen Mab speech is full of the imagery of light and darkness common in *Romeo and Juliet*. The day world is of Verona, when the Capulets are abroad and feuding is likely to break out. The night world is of the Capulet party, the balcony scene, and the graveyard, where the sexual passion is fatal. The love itself is described as a day within a night,

and, as in *A Midsummer Night's Dream*, the night-world is a Dionysian world:

> And fleckled darkness like a
> drunkard reels
> From forth day's path and
> Titan's fiery wheels.

And just as in the comedy the drive toward the fulfilment of love is carried through by the fairies and the tragic side of the story is reduced to parody, so in the tragedy the drive toward the fatal conclusion is in the foreground and the unseen impulses that prompt the lovers to fall in love so suddenly and so completely are suggested only by way of parody, in Mercutio's account of a fairy "hag" who evokes dreams of love from lovers. The sense of fatality and of a sinister sexual incubus (or succuba) is part of the character of Cressida and of Cleopatra: it is not part of the character of Juliet, and a special device is needed to suggest it. Some curious phrases, such as "pink for flower," appear as jokes, going by too fast for us to see much significance in them.

The divided world of the passion tragedies usually shows some correlation with another division between day and night, Appollo and Dionysus, common sense and romance, reality and desire, in which the Dionysian world is defeated. *Troilus and Cressida* has no very prominent day and night pattern in its imagery, but it does contrast the Trojans, who are playing a romantic game, with the Greeks, who are simply out to destroy a city. One word frequently associated with Hector is "live": he dislikes killing people unless they are enemies of a type that fall within his strictly designed heroic code, and the contrast with Achilles, examining Hector and gloating with such pleasure over the idea of killing in itself, is a sharper form of the contrast between romantic and realistic worlds.

Both worlds are aspects of human nature, and both show human beings bound to acting out prescribed roles, rituals that they have created themselves. But in the more romantic and idealistic world, the one that is destroyed by the tragedy, there is a greater sense of *gaya scienza*, a life with moments of passionate and profound joy. Defeated or not, we are never in any doubt about the reality of Romeo's love or Coriolanus' heroism. But in *Troilus and Cressida* there is a strong feeling of the quixotic and unreal quality of Trojan courtliness. The world that wins out in the comedies not only loses here, but has its values and standards called into question, an aspect of the play summed up in the repudiation of Pandarus, already mentioned. Hence *Troilus and Cressida* is not merely, so far as Hector is the hero, a tragedy; it is also, so far as Troilus is the hero, an anti-comedy. It therefore impresses us, in the age of the anti-hero, as a peculiarly modern play. But it will probably always seem a modern play, at least as long as the present age of irony lasts. The Trojans are not innocent in any intelligible sense of the word, but in Troilus' trust in Cressida and in Hector's chivalry there is a quality of inno-

cence. The play dramatizes, not the loss of innocence, but the sense of the infinite vulnerability of innocence, however little of it there is and wherever it is, and the inevitability of the defeat of such innocence by experience. The two components of the tragic vision, the ironic sense of being in time and the heroic effort that struggles against it, are both very clearly presented, but the ironic vision, elaborated by Ulysses' two great speeches, is more dominant than in any other tragedy.

Antony and Cleopatra is the definitive tragedy of passion, and in it the ironic and heroic themes, the day world of history and the night world of passion, expand into natural forces of cosmological proportions. The Western and Roman world is pervaded by order, rule and measure. Its commander is Octavius Caesar, the very incarnation of history and the world's greatest order-figure. The Eastern and Egyptian world is presided over by Cleopatra, queen of the ancient and timeless land which renews its fertility by the overflowing of the Nile each year, a Dionysian world of gigantic feasting and drunkenness and love-making. Both worlds are equally hard on the tax-payer. Each world is a self-evident reality to itself and an illusion to its rival. The Egypt of the play includes the Biblical Egypt, the land of bondage, and the Egypt of legend in which serpents and crocodiles are spawned from the mud of the Nile. Cleopatra, the serpent of the Nile, is a Venus rising from it in Enobarbus' speech; she is a goddess of the moon and sea. She has affinities with the kind of goddess figure that both Hebraic and Classical religions kept trying to subdue by abuse: her children are all bastards, and she has many analogies to her sister whore of Babylon. This last gives a curiously apocalyptic tone to the play: just as *Troilus and Cressida* is something of a secular fall, so *Antony and Cleopatra*, with its references to "Herod of Jewry," seems a kind of summing up of the old dispensation. The final cadences of the play seem to unite the two Biblical demonic themes, Egypt and the serpent, in a way that makes Cleopatra a central symbol of everything sinister in human history:

> This is an aspic's trail: and
> these fig-leaves
> Have slime upon them, such as
> the aspic leaves
> Upon the caves of Nile.

But *Antony and Cleopatra* is not a morality play, and Egypt is not hell: it is rather the night side of nature, passionate, cruel, superstitious, barbaric, what you will, but not to be identified with its vices, any more than Rome can be identified with its virtues. While Prince Henry is in the Dionysian night world in his youth, the wheel of fortune takes him up and out of it, but he has learned a good deal from his descent. Antony, however, is on the other side of the wheel and can only fall out of history and into the mythical world of passion opposite to it. Octavius goes up the wheel and takes command: Antony goes on to a hero's destruction, yet

even in his death he is upstaged by Cleopatra, who monopolizes the attention of the audience to the very end. Her Egypt is able to bring a superhuman vitality out of Antony that Rome cannot equal.

At the close of the play, the two ends of the wheel confront each other. Rome with its measure and order has won out over the overflowing Nile. But we can see something else besides high order: we can see that there is a part of nature that can never be ordered, a colossal exuberance of powers, the tailors of the earth, as Enorbarbus calls them, that weave and unweave the forms of life. Antony has caught a glimpse of these powers at the price of disappearing like a cloud when "the rack dislimns," for it is only a self-destroying will that can bring one close to them. In fact Antony may say, with Slender in *The Merry Wives*, "I am freely dissolved, and dissolutely". Hercules has deserted him, but we remember how Hercules got rid of the burden of the world by tricking Atlas into re-assuming it: perhaps there is something gullible about Caesar, as Cleopatra suggests when she says she hears Antony

> mock
> The luck of Caesar, which the gods give men
> To excuse their after wrath.

However, Caesar is now the master of his world, the secular counterpart to Christ, the off-stage presence in *Cymbeline* who is able to exact tribute from the end of the world in Britain even when defeated there. We say, in Roman terms, that Antony has lost "the world" for love. But his disappearance from the world is also, in a final twist of the tragic paradox, the appearance of another world that endures no master.

III

In his last lecture, Professor Frye dealt with "The Little World of Man: the Tragedy of Isolation." The main focus was on *Othello*, *Timon of Athens* and *King Lear*, the range of reference from Dante to Camus; the threads of allusion ran through most of the plays, and themes and symbols dealt with in the two previous lectures.

He began by making a distinction between the moral and conceptual nature of melodrama and the authentic feeling derived from Shakespearean tragedy. This led to a discussion of Shakespeare's relationship to the Christian tradition. In some of his contemporaries, Christian eschatology made for brutalizing and debasement, but Shakespeare is far more restrained than most of his contemporaries, of whom Tourneur and Ford are particularly fond of putting up signs reading "Danger—God at work" in the course of the action. The real hell of tragedy is the world of being in time, when considered as a world in which tragic action never stops.

At the bottom of Dante's hell we find a three-headed Satan meditatively chewing Judas Iscariot, Brutus and Cassius, one in each mouth. Judas we can understand, but why should Bru-

tus and Cassius be assigned the ultimate indignity of becoming two-thirds of the devil's bubble-gum? That is, why is the traitor regarded as the worst of men? Man is *homo ludens*, a player of games, and he is never more deeply engaged in play than when he is trying to kill someone at the risk of being killed himself. The coward is despised because he refuses to play the game, and so reminds us that it is a game, and that we have a choice of not playing it. The coward feels that the centre of life is not in society but in himself. The traitor is much more disturbing than the coward. It is the first postulate of the heroic society that no traitor can be honorably motivated: no enemy's cause is just, because justice cannot exist apart from loyalty to one's own leader. The coward goes on living in his society, however shamed and disgraced; the traitor suggests the nothingness, the sense of annihilation, inherent in the dissolving of the social group. Henry V, himself the son of a usurper—that is a traitor who was successful—when himself faced with a conspiracy remarks that the revolt "is like another fall of man." The traitor reminds us of what the doctrine of original sin reminds us, that human life is an ironic condition, and that the greatest efforts of loyalty and heroism can raise it only from the ironic into the tragic. And if the human condition can be seen as unendingly ironic or tragic, it is being seen as life in hell, with the traitor the closest to the source of personal evil.

The conspirators against Henry all say how happy they are to be caught and punished, as if seeking the consolations of the comfortable morality of melodrama. Such traitors are referred to by Shakespeare in Sonnet 124 as "fools of time"

> Which die for goodness, who
> have lived for crime.

The word "fool" in Shakespeare, when used in connection with time, nature or fortune means essentially the person to whom things happen, the one who cannot control events. The successful ruler is a combination of nature and fortune, *de jure* and *de facto* power. It is this synchronizing of nature and fortune that soothsayers study, and that the witches in *Macbeth* know something about. One feature of it is the sense of continuity in time, the preserving of which is what makes legitimacy so important a principle of government. The rebel figure has a sense of breaking through the continuity of time, and exists in a state of guilt between an irrevocable past and a dreadful future. Hamlet has some of the rebel-figure's characteristics because, though a usurper, Claudius is still a real king. That is why Hamlet thinks that time is out of joint. But he also has the disadvantages of the avenger's role, for just as the act of seizing power is subject to hurry, so the act of vengeance is subject to delay. If the vengeance is just, it represents a reintegrating of nature and fortune and so has to wait for the natural course of events. Avengers are

to be distinguished from traitors, and they can never be cowards; but nevertheless they are usually isolated from the tragic society in a similar way.

For a philosopher, isolation is the first act of consciousness. I am myself alone, he says, and the rest of the world then becomes objective to him. For a hero of a tragic action, isolating one's mind in this way is deeply terrifying. So Henry IV, in a moment of loneliness and enlarged consciousness, has a vision of the turning wheel of history and himself as a Sisyphus figure. Most other Shakespearean tragic heroes have similar revelations: life is an idiot's tale, signifying nothing; the gods kill us for their sport. These famous utterances are not merely expressions of despair; they are the only kind of philosophical reflexion that we are likely to get from an authentic tragedy.

The isolated consciousness can be prey to strategems and delusions. Iago works on Othello and creates a hell of "goats and monkeys" where there once was an entire world of marvels and adventures in the stories with which he wooed and won Desdemona. When the Moor has put out the last light in his black world, he sees, over against it, "another world," a perfect chrysolite or rejected pearl. Lear, having deprived himself of his own social context, starts asking about his identity, a question to which he gets contradictory and confusing answers. Edmund represents a world in which the identity is the "natural" one of the elements, in which the strong prey on the weak. The fool, on the other hand, represents something still unspoiled and innocent in the middle of a fallen nature. He is associated with the innocence of childhood, and Lear best shows his royal nature by his tenderness for his "boy"; this tenderness becomes increasingly parental, and the great cry at the end, "and my poor fool is hanged!", represents the blending together of the two people he loves as a father.

In the tragic vision whatever isolates the hero pushes him into the nausea of Hamlet or the hell-worlds of Othello and Macbeth. Lear is driven to madness, to the stormy nature which is a counterpart of a world in which chaos is come again. Poor Tom, the disguised Edgar, functions as the guardian spirit to guide Lear to the end of his journey to find his own nature. The final question about identity is posed when Lear reaches the end and appears to be merely an object in physical nature. Tragedy's answer is Tom, who "drinks the green mantle of the standing pool," in the nausea involved in man's contemplation of himself in a purely physical context.

The rhetoric of isolation, as we find it particularly in the fourth acts of *King Lear* and *Timon of Athens*, is mainly a bitter denunciation of a human hypocrisy, the contrast of reality and appearance. Lear and Timon are in a position to see this hypocrisy because, like the hypocrite, they have separated their real selves from their social relationships. In the

tragic vision, where one starts with a social order in which reality *is* appearance, the discovery of sin and hypocrisy cannot be made by the reason, but only by *saeva indignatio*.

Timon's generous and hospitable view of society, noble as it was, led to his fall and exile. There he acquires a more realistic view of human nature, but he still refuses to take command of Athens against the rebel-figure, Alcibiades. Like Lear, he is not easily convinced of the moral indifference of nature; it sustains him with roots and water, but he hopes, and half expects, that it will destroy everybody else. But Athens refuses to be destroyed: it makes a deal with Alcibiades and the wheel of history goes on turning. Timon in exile, trying to be opposite to humanity, tries also to ally himself with everything destructive in nature. His sense of outrage and his isolation prevent him both from exploiting human nature like Alcibiades and from a consistent vision of absurdity, such as Apemantus, the cynic, has. The only end for him is to die at the edge of the sea, which represents chaos, as does the storm in *King Lear*.

King Lear has been called a purgatorial tragedy, and if that means a structure even remotely like Dante's *Purgatorio*, we should expect to see, as we see in Dante, existence being taken over and shaped by a moral force. But we do not see this: all we see is an old man dying of an unbearable pain. The hideous wrench of agony which the death of Cordelia gives to the play is too much a part of the play even to be explained as inexplicable. And whatever else may be true, the vision of absurd anguish in which the play ends certainly is true.

Unlike melodrama, tragedy does not confirm the audience's stock moral responses. In authentic tragedy what we see as external to us is, first of all, the order of nature, with its servo-mechanism the wheel of fortune. Nature and fortune, when seen from the point of view of the human situation, constitute a vision of absurdity and anguish, what design is in them being unintelligible to human imagination, human emotions, and ultimately to human moral instincts. When Macbeth sees life as a meaningless idiot's tale, we can see that such a vision of absurdity is right for him at that point, and is therefore true for him. But it is not the whole truth, even for him, because he is capable of articulating it, nor for us, because we have shared with him, however reluctantly, an experience too broad and varied to be identified with its inevitable end, however desired an end. Tragedy finds its ultimate meaning neither in heroic death nor in ironic survival, nor in any doctrine deducible from either, but in its own re-enactment as experience.

In the tragedy of isolation the hero becomes a scapegoat, a person excluded from his society and thereby left to face the full weight of absurdity and anguish that isolated man feels in nature. In the tragic story there are usually plausible reasons why a character gets into a scapegoat position, but whatever the tragic hero has done, we are never so wise or virtuous that we cannot participate in the consequences of his fall with him. At the end of a comedy a new society is

created or restored; at the end of a tragedy, where most of the main characters are usually dead in any case, there is a far greater sense of mystery, because (paradoxically) it is not what the characters have learned from their tragic experience but what we have learned from participating in it, that directly confronts us. The end of a tragedy leaves the individual in the audience alone in a waste and void chaos of experience with a world to remake out of it. It is partly because of this insistent challenge to the spectator's recreative powers that the great tragedies are so endlessly fascinating to critics: merely to experience them seems to demand commentary as part of one's response.

To go further with this point would be to move into the later romances, including *Henry VIII*, seen as tragedies. *The Tempest* can be seen as a tragedy of order in which the dethroned prince acts as his own nemesis in another world, building up in that world a natural society, though according to a conception of nature that rises clear of history and the wheel of fortune. The later romances are not tragic in any sense in which we have been using that term in these lectures. Yet they represent another possible dimension of tragedy, of which the Greek archetype is *Alcestis*, or perhaps even the satyr-play, in which death is contained by the action and the emphasis is thrown on participation in a continuing movement. The audience does not directly participate, but it catches the rhythm of participation in the dance and song and in the unnumerable links of reconciliation and renewed partnership in which these plays end. They seem to point toward a world where the antithesis of spectator and spectacle, the subject confronting the object, no longer exists. Here the antithesis of tragedy and comedy is also overcome, and with it the antithesis of creator and creature. The paradox of tragedy, the vision of what is at once natural and absurd, is united to the paradox of comedy, a vision of what is equally natural and absurd in a different context. Here there is neither a chaos to recreate nor a new community floating away into the land of dreams, but, like the island of *The Tempest* which is Mediterranean and yet so curiously American as well, an old world that is a brave new world, an inheritance of which we are at last the rightful possessors.

In thanking Professor Frye, Principal Douglas LePan of University College lucidly expressed the feelings of the audience when he said how much he had learned from them. "Professor Frye," he said, "has surveyed Shakesperean tragedy with his customary authority and has mapped out that visionary landscape for us in a most masterly way. In the process, he has also provided us with many individual perceptions and illuminations of great value. I shall return to the plays themselves with a heightened appreciation of their tragic designs, and also of those places where, through the genius of their creator, they seem to go beyond the limits of any design." The long applause in Convocation Hall echoed and re-echoed these sentiments.

Teacher in Paris

Edward Bridge

It all started with a notice in Simcoe Hall advertising three vacancies in French government teaching assistantships for which graduates of Canadian universities might apply. I wanted to travel, I wanted to study abroad, and I wanted to pay my own way. So I applied, and got one of the vacancies. In Paris I found myself appointed to the staff of a lycée, teaching conversational English to the upper forms. I stayed two years, gradually increasing the scope of my work to include replacement teaching and more responsible duties with junior classes where English had not been taught before.

It is a good way to study abroad. You have to pay your own passage, but once you are there it is more remunerative than a scholarship or bursary. When I began I was making 680 francs net a month; at the end of two years I was up to 760 francs – about $150.

One of the great advantages is that you are immediately integrated into a French *milieu*. Ordinary foreign students in Paris don't get this. They generally live at the Cité Universitaire – a large residence complex for students from other countries. The French are proverbially hard to meet so these students mix only with their own type. I tried the Cité Universitaire for a time and then moved into a rooming house in Montparnasse near my school, the Lycée Gabriel Fauré, in the 13th arrondissement, a working class district on the left bank. My room was seven floors up by a service staircase; no water in the room – just an old fashioned bowl and pitcher, and a bucket. The rental was 30 francs a week; I earned it by giving private lessons in English two hours a week at the going rate of 15 francs an hour.

I drew my water supply from the communal tap on the landing which served the twenty-odd people who lived on the floor. The building was a pre-1914 better class apartment house whose upper floors had been occupied by the servants. I did a fair

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Edward Bridge is a graduate student in English. Born at Windsor, Ontario, he attended St. Michael's College School and St. Michael's College. While an undergraduate he took two complete summer courses in French Language and Literature at Laval University. After graduating from Toronto in honour Philosophy and English, he went to Paris to teach English to French children. We talked to him shortly after his return and did a tape recording – the results of which begin on this page.

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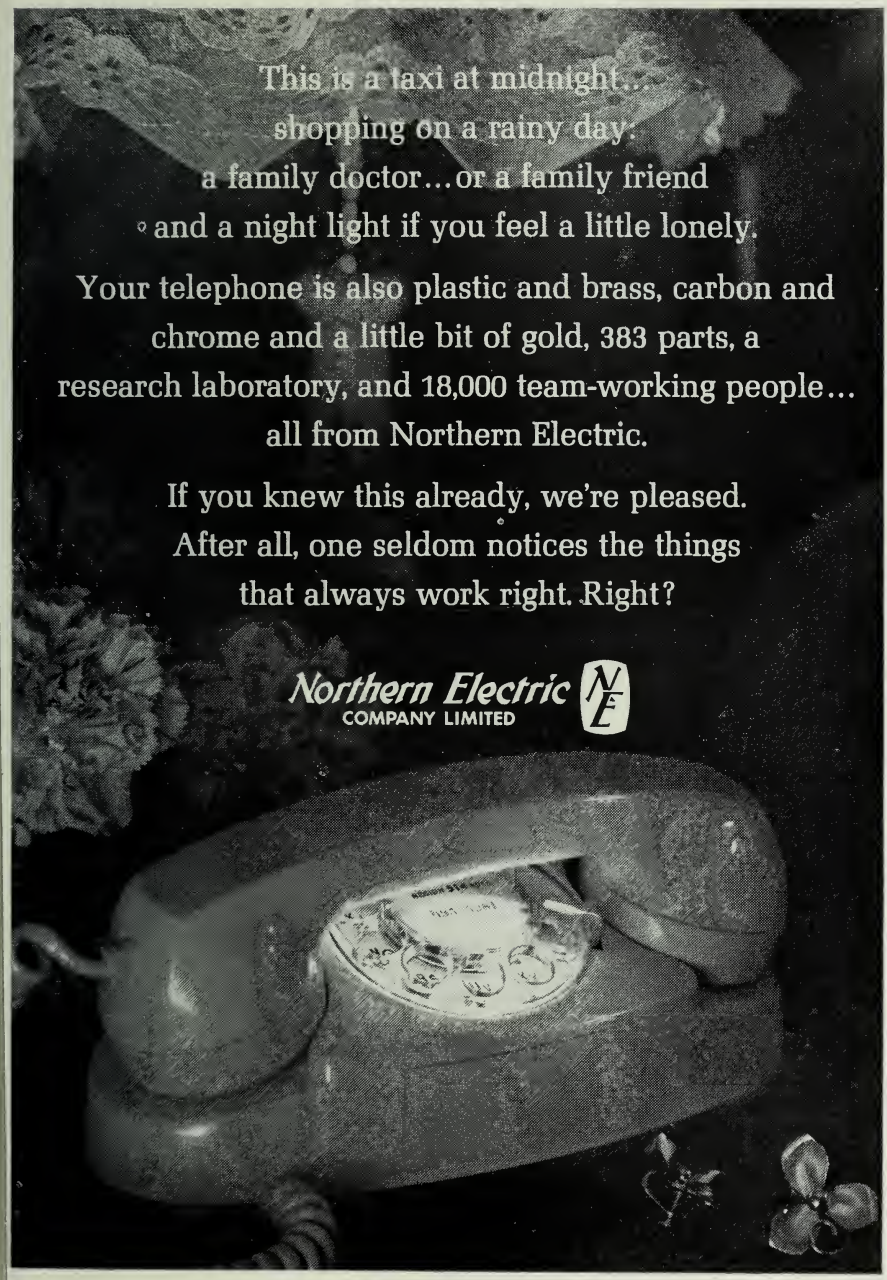
amount of cooking in my room on a 4-inch gasoline camping stove. Fortunately, although residence facilities for Parisian students are very meagre, there is a vast network of student restaurants. These are enormous modern buildings of five or six storeys with nothing but cafeteria service. Food is mass-produced in a huge kitchen at the bottom and sent up on elevators to a service kitchen on each floor furnished only with tables and chairs. All Paris students, French or foreign, if regularly enrolled in a course, have the right to eat in these places for 1 franc 30 (about 30 cents) a meal. Anywhere else it would cost at least 5 francs. To drink, you could get beer, wine, or cider—or even milk.

In Paris schools the teaching of languages is very highly developed. Advanced methods, including direct and audio-visual aids, are used throughout. Oral language is stressed, but not to the detriment of grammar and reading. As I have said, my first classes were with the upper forms. Here the children had already had four years of English and were pretty fluent—already bilingual, you might say. They ranged from 15 to 18 years of age. Since England is so close many of them were in the habit of spending holidays there; they were real Anglophiles. But because most of their text books were based on England and because I was from Canada, they were far more interested in North America than in Britain. In fact, they were always interested, and always suggesting topics that they wanted to discuss. I found them very stimulating. Classes lasted for an hour, and there were 30 to 35 students in each class. The specifications of my job called for only minimum homework assignments, but I know they thought nothing of three hours a night, and even a supplement on the weekends. In my second year the head of the department asked me to take on some of the lower forms; pupils of eleven and twelve. I gave them three half-hour classes a week; five other teachers did the same. There I found the same keenness and the same tendency to do extra homework.

In general, the French secondary school system is good, but overcrowding is always a problem. As in England, the system has two channels leading from age eleven. In the upper stream are the lycées (grammar schools) which lead to a *baccalauréat*, a sort of double Grade 13—twice the work and twice the pressure. In terms of international equivalents this school leaving certificate is the equal of two years at an American liberal arts college or one year of a Canadian honour course. If one takes into account the level of maturity which it implies, it is probably worth more. In the lower stream are the *collèges d'enseignement secondaire* (secondary "modern" schools). Because of the pressure on enrolment the two systems are highly competitive. If a child is idle, or incapable of doing the lycée work, he is moved to the second stream. The French term is "orientation". The lycée pupils are oriented in the first 3-year cycle; if at the end of it their progress report is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poor they are sent to the modern school, to end their education at 16.

Extra-curricular activities sponsored by the school are hardly known at all in France. Lycée Gabriel Fauré was, however, new, and the principal was a forward-looking type. There was a photo club (of which I was in charge during my second year) with a fully equipped laboratory. There was a theatrical company. On their own initiative, teachers would take groups of students through museums or to theatres. There was a gym furnished with modern apparatus; the girls had gymnastics and volleyball; the boys soccer, basketball, tumbling, equipment work, and an odd hybrid game—called "handball" —played between teams on the gym floor. (These sports were part of classwork; there was only one interschool league—for soccer.) Finally, we had three dances a year, one at the end of each term, and there would be at least one afternoon tea dance.

The parents I came in contact with were working class or the lower ranges of white collar office workers. I saw a lot of them, especially when I was teaching the younger pupils. They were most solicitous about the progress of their children. This progress was attentively followed by groups of teachers, and parents were consulted twice at the end of each term. One or other of the parents would always be there armed with a notebook containing previous marks and remarks, and would grill the teachers closely. Teachers of the higher classes would meet three times towards the end of

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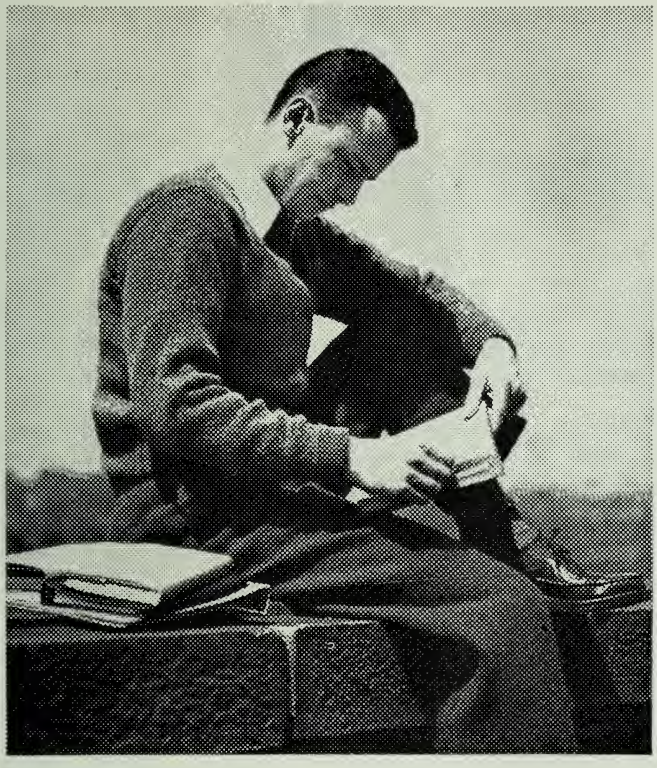
each term—in what they called "a council of the class"—and decide whether a student should be congratulated, warned, or sent to the other type of school. They were real "pros", and devoted to their work.

When the lycée graduate goes on to higher education he does not find a composite university like Toronto. Arts and professional colleges are geographically and spiritually separated. The artsman seldom meets a science type unless they are rooming together. But let's suppose that the student is a candidate for an arts degree. He enters an arts college and does what is called a "propédeutique" year of general literary studies. If he survives a failure rate of about 43% at the end of this year, he chooses his field and in it does four "certificates of superior studies" leading to a *licence ès lettres*. Take for instance a licentiate in Philosophy, which is normally the next step. At a maximum rate of two certificates a year, there is one in general psychology, another in ethics and sociology, a third in the history of philosophy, and a fourth in logic and general philosophy. Thus under the best conditions, your university career is sometimes three, but generally four, years. The licentiate is more or less an M.A. without the dissertation.

What with the lycée and the Sorbonne (where I did some study with reasonably satisfactory results) I got to know Paris well. Parisian life is very hard to summarize, and when you come back from living two years in a culture like that you wonder what



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has happened to you. Toronto seems a sort of cold, hard-thinking, Nordic, conscience-ridden type of city. Paris gives you the fantastic contrast of people who love life and express themselves through living, and for whom very small joys become a ritual —like going to a café as a family. At four o'clock of a Sunday these places were overflowing with families and their friends. Because people have such difficulty in lodging themselves well, you were seldom invited to someone's home. So students, too, met at the cafés.

One of my main objects in taking this teaching job was to travel, not as a tourist but as some one with first-hand knowledge of European life. This I managed to do. On the week-ends and at Christmas and Easter I became a kind of anti-tourist tourist, sometimes on my own and sometimes as a guest at a country home outside Paris or in the Provinces. At other times I vagabonded in England or travelled in Norway, Sweden, and Finland on a second-hand motor bike. Wonderful countries, these Scandinavian lands, with their dark forests, deep fiords, tranquil lakes, evocative landscapes and pleasant villages and towns. Finland, especially, where the people have a mystical quality about them that speaks of depth of feeling, of experience, and of history. But I am beginning to romanticize, and that was not the object of this story. I went overseas to teach and learn. I taught for two years. I learned a lot.

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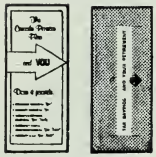

(Continued from Page 74)

because they have traditionally relied heavily on graduate schools abroad, especially in the United States and Britain, to supply their need for faculty by training either Canadian graduate students or their own citizens who then emigrated to teaching posts in Canada. The present difficulties of universities abroad in meeting even their own needs for staff means that Canada is now faced with the necessity of playing a much more important role than in the past in increasing the number of university teachers by training them in Canadian graduate schools. Should Canada fail in producing sufficient university teachers, the high standards of undergraduate instruction that have until now been hers will decline. An increase in the size of classes and in the hours of teaching required of individual university teachers would reduce their competence by depriving them of opportunities for study and research. This would drive the best of them to seek more favourable conditions for teaching and research abroad thus compounding the difficulties for higher education in Canada and forcing the acceptance of inadequately trained faculty.

The degree of Doctor of Philosophy is today the most important single indication that its holder has completed a course of study fully qualifying him for a university teaching post. Somewhat less than half of Canadian university teachers have the Ph.D. If this proportion was to be maintained,

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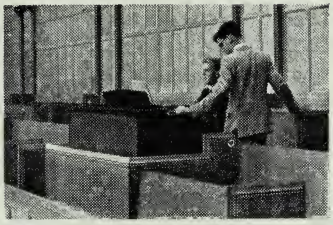

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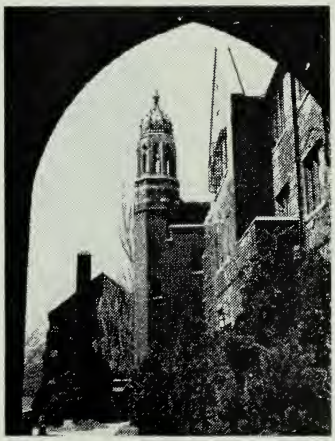

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about 1,500 holders of the Ph.D. would have to be hired by universities this year and for many years to come. More would be needed to up-grade the qualifications of faculties of Canadian universities. Canadian universities awarded 569 Ph.D.'s last year. Since less than half of all recipients of the Ph.D. go into university teaching, this number would not have been enough even to maintain the existing size of the academic establishment, much less to supply the vast increase in numbers that is required. Reliance on foreign graduate schools to make up the shortfall would be ill-founded in view of the equal pressure of demand abroad.

The choice facing Canadian graduate schools then becomes one of speeding up the production of Ph.D.'s, relying on the M.A. as sufficient training for university teaching, and introducing a new graduate degree.

The production of Ph.D.'s cannot be increased rapidly owing to a period of four to ten years usually necessary to complete the Ph.D. program. Doctorates in the physical sciences are typically completed in the lower and in the social sciences and the humanities in the upper part of this range of years. The Master of Arts or of Science degree is today not sufficient training for new faculty members in view of the increase in knowledge that is currently taking place. It is true that holders of only the M.A. do obtain teaching positions in the currently very strong market for university teachers. But they risk being seriously handicapped in their career by a background usually inadequate for the

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demands that teaching will put upon them in the future and in their competitive position with respect to other better trained colleagues. The University of Toronto saw in the inadequacy of the M.A. for university teaching and in the manifest demand for vastly increased staff one source of need for a qualification senior to the M.A. and capable of being obtained more quickly than the Ph.D.

But the only justification for the new degree, the Master of Philosophy, was not the simple need for more university teachers. The Phil.M. was established also in part because of the shortcomings of the Ph.D. as the single instrument for training university teachers. It is of course true that the Ph.D. is the best training that has yet developed for the research scholar, and it is acknowledged that the productive research scholar is essential to the wellbeing of the university. But the present practice of treating the Ph.D. as virtually the single requirement for a full academic career is harmful to many individuals and indeed to Ph.D. programs themselves. In literature, for instance, an individual who wishes to make his scholarly contribution in the field of criticism may be handicapped in his efforts by the need to fit his program within the structure of the Ph.D. which has historical and philological origins. Also, a broader course of study may for some students provide a better scholarly training than the concentration on a research thesis that is the essence of the Ph.D. program. Many are admirable teachers

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who eagerly keep up with the flow of scholarship and make substantial contributions to the development of knowledge and yet who are not temperamentally suited to following the prescribed Ph.D. program. Because of the unique role of the Ph.D. many such persons complete part of the requirements for the degree, but do not complete it and decline in effectiveness because of the appearance of failure that such an inconclusive program presents. Others who in fact complete the Ph.D. program may never do research again after their Ph.D. theses and have consequently undertaken a program the benefits of which are not exploited. The Phil.M. recognizes that there is a place in the academic profession for the able and dedicated teacher who is interested in mastering and passing to his students what is already known without necessarily undertaking to add immediately to this knowledge in the training that he undertakes though he may later on engage in sustained research. When the place of such a teacher is recognized and a suitable program for his training is developed such as the Phil.M. program, this permits an important clarification in the Ph.D. program and an improvement of it since the intake to Ph.D. programs is then restricted to those who want training that is specifically research oriented.

The special nature of the Phil.M. degree has meant that it has been established only for those departments that wished to adopt the program and not for all departments in the University of Toronto. So far 15 departments

have chosen to offer the Phil.M. degree. All of these departments are in the humanities and social sciences. But the departments involved in such a program need not necessarily be the same at all times nor are they the same at all places. The University of Waterloo, which has this year decided to offer the Phil.M., does so in mathematics, as well as in three departments in the humanities. In England, at the universities of Cambridge and of London, the Phil.M. is given in chemistry, electrical engineering, and some other sciences as well as by departments in the humanities and social sciences.

The course of studies leading to the Master of Philosophy at the University of Toronto requires full-time residence for a period of two years beyond the Honours B.A. degree in the same discipline, and consists chiefly of courses and seminars. In addition, the candidates write a major essay or research paper which reflects independent scholarship though it does not necessarily represent an original contribution to knowledge. The purpose is to avoid the exhaustive research necessary to make the contribution to knowledge required of a Ph.D. thesis that is the cause of the characteristically long delay in completing the Ph.D. degree. The intention is that the candidates for the Master of Philosophy should complete all the work for the degree and receive it within the period of residence. Indeed, a limit of one year beyond the two years of residence is placed on the time during which the requirements must be completed. Should a student

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already have a Master of Arts degree, residence credit for one year may be given him because of the M.A. as is the case when a student enrols for a Ph.D. program.

The School of Graduate Studies was concerned lest this new degree be suspected of being used to bail out weak Ph.D. candidates or even of being given to candidates who had failed a portion of their Ph.D. program. Such use for the Phil.M. is impossible. Stringent regulations were applied placing high standards for admission to Phil.M. candidacy and making it impossible to change a registration from a Ph.D. to a Phil.M. program except during a brief period at the very beginning of a Ph.D. program.

The School of Graduate Studies established standards for admission for Phil.M. candidates that exceed those for the Ph.D. degree. Whereas admission to both M.A. and Ph.D. candidacy is possible for students who have II class Honours standing, admission to a Phil.M. program is only possible for students who have achieved an average of at least 70 per cent in their earlier work at the University of Toronto or the equivalent of that standing elsewhere. This does not mean that candidates for the Ph.D. are in fact usually weaker than candidates for the Master of Philosophy. The regulations of the School of Graduate Studies only set minimum standards and departments can then guide students on the basis of any higher standards that the departments may judge fit. However, experience so

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far has shown that Phil.M. candidates are on the average quite as strong in their earlier academic achievement as are Ph.D. candidates and it would be impossible to differentiate between these two groups on the basis of their standing in their B.A. or M.A. work.

Though the Phil.M. program is designed to meet needs different from those that are served by the Ph.D. program, following a Phil.M. program nevertheless does not bar a student whose interests change from continuing into a Ph.D. program. Thus a Phil.M. candidate may transfer into a Ph.D. program at virtually any stage of his progress and a holder of a Phil.M. may proceed to the Ph.D. by being in residence for one more year. Thus a person proceeding to the Ph.D., but who takes the Phil.M. on the way, is not subject to additional residence though he must usually satisfy more course or other requirements than a student who has concentrated on obtaining the Ph.D. only.

A danger exists that this attempt to expand the traditional structure of graduate degrees will run into prejudice because of the unfamiliarity with the degree and the possible suspicion that it is a second-class Ph.D. A knowledge of the purposes of the degree and the standards required to obtain it dispel this doubt and it is particularly important for the development of the new degree that no misunderstanding should remain. It is important too for the welfare of Canadian universities that they should not fail to appropriately use persons with a high level of training because of the newness of the degree they hold. It is vital to those who have courageously enrolled for a new degree that no misunderstanding should exist of its significance.

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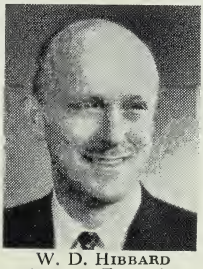

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